

2008 Model Year POLICE VEHICLE EVALUATION



**STATE OF MICHIGAN
Department of State Police
and
Department of Management and Budget**

**2008 Model Year
Police Vehicle
Evaluation Program**

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PREFACE

The Michigan State Police Vehicle Test Team is pleased to announce the results of the 2008 model year Police Vehicle Evaluation. This year we tested nineteen vehicles in total, including one pickup truck, one Suburban and three motorcycles. We appreciate your continued support and encouragement. The vehicles evaluated this year include the following:

POLICE CATEGORY

Ford Police Interceptor (3.27:1)	4.6L
Ford Police Interceptor (3.27:1) E85	4.6L
Ford Police Interceptor (3.55:1)	4.6L
Chevrolet Impala 9C1	3.9L
Chevrolet Impala 9C1 E85	3.9L
Chevrolet Tahoe PPV 2WD	5.3L
Chevrolet Tahoe PPV 2WD E85	5.3L
Dodge Charger	3.5L
Dodge Charger	5.7L
Dodge Magnum	3.5L
Dodge Magnum	5.7L

SPECIAL SERVICE CATEGORY

*Special Service Package vehicles are not suitable for high speed, pursuit or emergency driving.

Ford Explorer*	4.6L SFI	(2 Wheel Drive)
Ford Expedition*	5.4L 3V SMFI	(2 Wheel Drive)
Ford F-150 2WD Super Crew*	5.4L 3V SMFI	(2 Wheel Drive)
Chevrolet Tahoe*	5.3L SPFI	(4 Wheel Drive)
Chevrolet Suburban ¾ Ton*	6.0L SPFI	(4 Wheel Drive)

MOTORCYCLES

Harley Davidson Electra Glide FLHTP
Harley Davidson Road King FLHP
BMW Motorrad USA R1200RT-P

GENERAL INFORMATION

All of the cars and trucks were tested with a clean roof (no overhead light or lightbar) and without "A" pillar mount spotlights. We believe this is the best way to ensure all of the vehicles are tested on an equal basis. Remember that once overhead lights, spotlights, radio antennas, sirens, and other emergency equipment are installed, overall performance may be somewhat lower than we report.

Each vehicle was tested with the tires that are available as original equipment on the production model. Specific tire information for each vehicle is available in the Vehicle Description portion of this report. All vehicles listed in this report were equipped with electronic speed limiters.

Motorcycles were tested with equipment installed as provided by their respective manufacturer. Harley Davidson chose to test their motorcycles with minimal equipment. BMW chose to test their motorcycle with the majority of the equipment installed. We will continue to refine the testing procedures with the motorcycle manufacturers and their participation.

Chrysler Proving Grounds - Acceleration, Top Speed, & Braking Tests

We had a full line up of test vehicles and we would like to thank the assistance we got from Mr. Craig Hageman from the Chrysler Proving Grounds, our host. We appreciate the support we received from General Motors, Ford, Chrysler, Harley Davidson and BMW during testing. This also was the second year of motorcycle testing and we continue to get great feedback on this important component to the testing lineup. We expect other manufacturers that produce law enforcement motorcycles to participate in the future.

Michigan State Police Precision Driving Unit- Motorcycle Dynamics

Sunday we completed the motorcycle dynamics testing with great weather.

Grattan Raceway - Vehicle Dynamics (High Speed Handling) Test

We had a power steering pump go out on a CVPI at Grattan Raceway Park.

*The Chevrolet 4WD Tahoe, Chevrolet Suburban, Ford Explorer, Ford Expedition, Ford F150 Super Crew are "special service" vehicles and are not driven through the vehicle dynamics (high-speed handling) test. These vehicles are not engineered or recommended for high-speed emergency driving or pursuit applications.

We recommend you review the information contained in this report and then apply it to the needs of your agency. This report is not an endorsement of products, but a means of learning what's available for your officers so they can do their job effectively and safely. If anything in this report requires further explanation or clarification, please call or write.

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Canfield Equipment Service, Inc. for assisting us with communication evaluations for the vehicles and motorcycles.

Special thanks to General Motors, Ford Motor Company, Chrysler Motors, Harley Davidson Motorcycles and BMW Motorrad USA for their hard work in building and preparing the test cars and motorcycles. We are grateful for your dedication to law enforcement. Everyday law enforcement looks to these vehicles to do a list of duties varied and enduring.

Finally, thanks to all in the United States and Canada who represent law enforcement and purchasing agencies for your constant encouragement and support. We are proud to make a contribution to the law enforcement community.

Michigan State Police Vehicle Test Team:



TEST EQUIPMENT

The following test equipment is utilized during the acceleration, top speed, braking, and vehicle dynamics portions of the evaluation program.

CORRSYS DATRON TECHNOLOGY, INC., 21654 Melrose Ave., Building 16, Southfield, Michigan 48075

DLS Smart Sensor – Optical non-contact speed and distance sensor

MicroSat GPS Speed and Distance Sensor

Shoei Helmets, 3002 Dow Ave., Suite 128, Tustin, CA 92780

Law Enforcement Helmet – Model RJ-Air LE

AMB i.t. US INC., 1631 Phoenix Blvd., Suite 11, College Park, GA 30349

AMB TranX extended loop decoder

Mains adapter 230 V AC/12 V DC

AMB TranX260 transponders

AMMCO TOOLS, Inc., 2100 Commonwealth Ave., North Chicago, IL 60064

Decelerometer, Model 7350

TEST VEHICLE DESCRIPTIONS AND PHOTOGRAPHS

Ford Police Interceptor

4.6L Axle Ratio 3.27:1



TEST VEHICLE DESCRIPTION

MAKE Ford	MODEL Police Interceptor		SALES CODE NO. P71	
ENGINE DISPLACEMENT	CUBIC INCHES 281		LITERS	4.6
FUEL SYSTEM	Sequential Multiport Fuel Injection E85 Capable		EXHAUST	Dual
HORSEPOWER (SAE NET)	250 @ 5000 RPM		ALTERNATOR	200
TORQUE	297ft-lbs @ 4000 RPM		BATTERY	750 CCA
COMPRESSION RATIO	9.4:1			
TRANSMISSION	MODEL 4R70W		TYPE 4-Speed Electronic Automatic	
	LOCKUP TORQUE CONVERTER? Yes			
	OVERDRIVE? Yes			
AXLE RATIO	3.27			
STEERING	Power Rack and Pinion, variable ratio			
TURNING CIRCLE (CURB TO CURB)	40.3 ft.			
TIRE SIZE, LOAD & SPEED RATING	Goodyear Eagle RS-A P235/55R17 98W			
SUSPENSION TYPE (FRONT)	Independent SLA with ball joint & coil spring			
SUSPENSION TYPE (REAR)	4 bar link with Watts Linkage			
GROUND CLEARANCE, MINIMUM	5.6 in.	LOCATION Exhaust joint		
BRAKE SYSTEM	Power, dual front piston, single rear piston, 4 circuit and ABS			
BRAKES, FRONT	TYPE Vented disc		SWEPT AREA 273 sq. in.	
BRAKES, REAR	TYPE Vented disc		SWEPT AREA 176 sq. in.	
FUEL CAPACITY	GALLONS 19.0		LITERS	71.9
GENERAL MEASUREMENTS	WHEELBASE 114.6 in.		LENGTH	212.0 in.
	TEST WEIGHT 4145		HEIGHT	58.3 in.
HEADROOM	FRONT 39.5 in.		REAR	37.8 in.
LEGROOM	FRONT 41.6 in.		REAR	38.0 in.
SHOULDER ROOM	FRONT 60.6 in.		REAR	60.0 in.
HIPROOM	FRONT 57.4 in.		REAR	56.1 in.
INTERIOR VOLUME	FRONT 57.6 cu. ft.		REAR	48.8 cu. ft.
	COMB 106.4 cu. ft.		TRUNK	20.6 cu. ft.
EPA MILEAGE EST. (MPG)	CITY 14	HIGHWAY 21		COMBINED 16
EPA MILEAGE EST. (MPH) E85	CITY 10	HIGHWAY 16		COMBINED 12

Ford Police Interceptor

4.6L Axle Ratio 3.55:1



TEST VEHICLE DESCRIPTION

MAKE Ford	MODEL Police Interceptor		SALES CODE NO. P71	
ENGINE DISPLACEMENT	CUBIC INCHES 281		LITERS	4.6
FUEL SYSTEM	Sequential Multiport Fuel Injection E85 Capable		EXHAUST	Dual
HORSEPOWER (SAE NET)	250 @ 5000 RPM		ALTERNATOR	200
TORQUE	297 ft-lbs @ 4000 RPM		BATTERY	750 CCA
COMPRESSION RATIO	9.4:1			
TRANSMISSION	MODEL 4R70W		TYPE 4-Speed Electronic Automatic	
	LOCKUP TORQUE CONVERTER? Yes			
	OVERDRIVE? Yes			
AXLE RATIO	3.55			
STEERING	Power Rack and Pinion, variable ratio			
TURNING CIRCLE (CURB TO CURB)	40.3 ft.			
TIRE SIZE, LOAD & SPEED RATING	Goodyear Eagle RS-A P235/55R17 98W			
SUSPENSION TYPE (FRONT)	Independent SLA with ball joint & coil spring			
SUSPENSION TYPE (REAR)	4 bar link with Watts Linkage			
GROUND CLEARANCE, MINIMUM	5.6 in.	LOCATION Exhaust joint		
BRAKE SYSTEM	Power, dual front piston, single rear piston, 4 circuit and ABS			
BRAKES, FRONT	TYPE Vented disc		SWEPT AREA 273 sq. in.	
BRAKES, REAR	TYPE Vented disc		SWEPT AREA 176 sq. in.	
FUEL CAPACITY	GALLONS 19.0		LITERS	71.9
GENERAL MEASUREMENTS	WHEELBASE 114.6 in.		LENGTH 212.0 in.	
	TEST WEIGHT 4128		HEIGHT 58.3 in.	
HEADROOM	FRONT 39.5 in.		REAR 37.8 in.	
LEGROOM	FRONT 41.6 in.		REAR 38.0 in.	
SHOULDER ROOM	FRONT 60.6 in.		REAR 60.0 in.	
HIPROOM	FRONT 57.4 in.		REAR 56.1 in.	
INTERIOR VOLUME	FRONT 57.6 cu. ft.		REAR 48.8 cu. ft.	
	COMB 106.4 cu. ft.		TRUNK 20.6 cu. ft.	
EPA MILEAGE EST. (MPG)	CITY 14	HIGHWAY 21		COMBINED 16

Chevrolet Impala *(9C1) 3.9L SPFI*



TEST VEHICLE DESCRIPTION

MAKE Chevrolet	MODEL Impala 9C1		SALES CODE NO. 1WS19	
ENGINE DISPLACEMENT	CUBIC INCHES 237		LITERS	3.9
FUEL SYSTEM	Sequential Port Fuel Injection E85 Capable		EXHAUST	Single
HORSEPOWER (SAE NET)	240 @ 5200 RPM		ALTERNATOR	150 amp.
TORQUE	240 ft-lbs @ 4000 RPM		BATTERY	750 CCA
COMPRESSION RATIO	9.4:1			
TRANSMISSION	MODEL 4T65E		TYPE 4-Speed Automatic	
	LOCKUP TORQUE CONVERTER? Yes			
	OVERDRIVE? Yes			
AXLE RATIO	3.29:1			
STEERING	Power Rack and Pinion			
TURNING CIRCLE (CURB TO CURB)	38.0 ft.			
TIRE SIZE, LOAD & SPEED RATING	Pirelli P6, P225R16 97V			
SUSPENSION TYPE (FRONT)	Independent McPherson strut, coil springs & stabilizer bar			
SUSPENSION TYPE (REAR)	Independent Tri-Link coil spring over strut & stabilizer bar			
GROUND CLEARANCE, MINIMUM	7.1 in.	LOCATION Engine cradle		
BRAKE SYSTEM	Power, dual hydraulic, anti-lock			
BRAKES, FRONT	TYPE Vented disc		SWEPT AREA 235.4 sq. in.	
BRAKES, REAR	TYPE Solid disc		SWEPT AREA 160.3 sq. in.	
FUEL CAPACITY	GALLONS 17.0		LITERS	64.3
GENERAL MEASUREMENTS	WHEELBASE 110.5 in.		LENGTH	200.4 in.
	TEST WEIGHT 3714		HEIGHT	58.7 in.
HEADROOM	FRONT 39.4 in.		REAR	37.8 in.
LEGROOM	FRONT 42.3 in.		REAR	37.6 in.
SHOULDER ROOM	FRONT 58.7 in.		REAR	58.6 in.
HIPROOM	FRONT 56.4 in.		REAR	57.2 in.
INTERIOR VOLUME	FRONT 56.5 cu. ft.		REAR 55.7 cu. ft.	
	COMB 104.8 cu. ft.		TRUNK 18.6 cu. ft. w/ compact spare	
EPA MILEAGE EST. (MPG)	CITY 18	HIGHWAY 27		COMBINED 21
EPA MILEAGE EST. (MPG) E85	CITY 13	HIGHWAY 20		COMBINED 16

Chevrolet Tahoe PPV

5.3L SPFI



VEHICLE TEST DESCRIPTION

MAKE Chevrolet	MODEL Tahoe PPV – 2WD		SALES CODE NO. CC10706	
ENGINE DISPLACEMENT	CUBIC INCHES 327		LITERS	5.3
FUEL SYSTEM	Sequential Port Fuel Injection E85 Capable		EXHAUST	Single
HORSEPOWER (SAE NET)	320 @ 5200 RPM		ALTERNATOR	160
TORQUE	340 ft-lbs @ 4000 RPM		BATTERY	730 CCA
COMPRESSION RATIO	9.5:1			
TRANSMISSION	MODEL 4L60E		TYPE 4 – Speed Automatic Overdrive	
	LOCKUP TORQUE CONVERTER? Yes			
	OVERDRIVE? Yes			
AXLE RATIO	3.73			
STEERING	Power – Rack & Pinion			
TURNING CIRCLE (CURB TO CURB)	39.0 ft.			
TIRE SIZE, LOAD & SPEED RATING	Goodyear Eagle RS-A P265/60R17 108H			
SUSPENSION TYPE (FRONT)	Independent, single coil over shock with stabilizer bar			
SUSPENSION TYPE (REAR)	Multi-link with coil springs			
GROUND CLEARANCE, MINIMUM	8.00 in.	LOCATION Rear axle		
BRAKE SYSTEM	Vacuum-boost, power, anti-lock			
BRAKES, FRONT	TYPE Disc		SWEPT AREA 213 sq. in.	
BRAKES, REAR	TYPE Disc		SWEPT AREA 133 sq. in.	
FUEL CAPACITY	GALLONS 26.0		LITERS	98.4
GENERAL MEASUREMENTS	WHEELBASE 116 in.		LENGTH 198.9 in.	
	TEST WEIGHT 5273		HEIGHT 73.9	
HEADROOM	FRONT 40.3 in.		REAR 39.2 in.	
LEGROOM	FRONT 41.3 in.		REAR 39.0 in.	
SHOULDER ROOM	FRONT 65.3 in.		REAR 65.2 in.	
HIPROOM	FRONT 64.4 in.		REAR 60.6 in.	
INTERIOR VOLUME *MAX. CARGO IS W/REAR SEATS FOLDED DOWN	FRONT 62.9 cu. ft.		REAR 57.68 cu. ft.	
	COMB 120.58 cu. ft.		*MAX. CARGO 108.9 cu. ft.	
EPA MILEAGE EST. (MPG)	CITY 14	HIGHWAY 19		COMBINED 16
EPA MILEAGE EST. (MPG) E85	CITY 11	HIGHWAY 14		COMBINED 12

Dodge Charger

3.5L SPFI



TEST VEHICLE DESCRIPTION

MAKE Dodge	MODEL Charger		SALES CODE NO. 27A	
ENGINE DISPLACEMENT	CUBIC INCHES 214		LITERS	3.5
FUEL SYSTEM	Sequential Port Fuel Injection		EXHAUST	Single
HORSEPOWER (SAE NET)	250 @ 6400		ALTERNATOR	160 Amp
TORQUE	250 lbs-ft @ 3800		BATTERY	800 CCA
COMPRESSION RATIO	10.0:1			
TRANSMISSION	MODEL A580		TYPE 5 Speed Electronic Automatic	
	LOCKUP TORQUE CONVERTER? Yes			
	OVERDRIVE? Yes			
AXLE RATIO	2.87:1			
STEERING	Power Rack & Pinion			
TURNING CIRCLE (CURB TO CURB)	38.9			
TIRE SIZE, LOAD & SPEED RATING	Continental ContiProContact P225/60 R 18 99V			
SUSPENSION TYPE (FRONT)	Independent High Arm SLA with Dual Ball Joint Lower, Coil Spring, Sway Bar			
SUSPENSION TYPE (REAR)	Independent Multi-Link, Coil Spring, Sway Bar			
GROUND CLEARANCE, MINIMUM	5.2 in.	LOCATION Fascia Belly Pan		
BRAKE SYSTEM	Power, Dual Piston Front/Single Piston Rear, Anti-Lock			
BRAKES, FRONT	TYPE Vented Disc		SWEPT AREA 282 sq. in.	
BRAKES, REAR	TYPE Vented Disc		SWEPT AREA 242 sq. in.	
FUEL CAPACITY	GALLONS 19		LITERS	72
GENERAL MEASUREMENTS	WHEELBASE 120 in.		LENGTH	200.1 in.
	TEST WEIGHT 3898		HEIGHT	58.2 in.
HEADROOM	FRONT 38.7 in.		REAR	36.2 in.
LEGROOM	FRONT 41.8 in.		REAR	40.2 in.
SHOULDER ROOM	FRONT 59.3 in.		REAR	57.6 in.
HIPROOM	FRONT 56.2 in.		REAR	55.5 in.
INTERIOR VOLUME	FRONT 55.5 cu. ft.		REAR	48.5 cu. ft.
	COMB 104 cu. ft.		TRUNK	16.2 cu. ft.
EPA MILEAGE EST. (MPG)	CITY 17	HIGHWAY 24		COMBINED 20

Dodge Charger

5.7L SPFI



TEST VEHICLE DESCRIPTION

MAKE Dodge	MODEL Charger		SALES CODE NO. 29A	
ENGINE DISPLACEMENT	CUBIC INCHES 345		LITERS	5.7
FUEL SYSTEM	Sequential Port Fuel Injection		EXHAUST	Dual
HORSEPOWER (SAE NET)	340 @ 5000		ALTERNATOR	160 Amp
TORQUE	390 lbs-ft @ 4000		BATTERY	800 CCA
COMPRESSION RATIO	9.7:1			
TRANSMISSION	MODEL A580		TYPE 5 Speed Electronic Automatic	
	LOCKUP TORQUE CONVERTER? Yes			
	OVERDRIVE? Yes			
AXLE RATIO	2.82:1			
STEERING	Power Rack & Pinion			
TURNING CIRCLE (CURB TO CURB)	38.9			
TIRE SIZE, LOAD & SPEED RATING	Continental ContiProContact P225/60 R 18 99V			
SUSPENSION TYPE (FRONT)	Independent High Arm SLA with Dual Ball Joint Lower, Coil Spring, Sway Bar			
SUSPENSION TYPE (REAR)	Independent Multi-Link, Coil Spring, Sway Bar			
GROUND CLEARANCE, MINIMUM	5.2 in.	LOCATION Fascia Belly Pan		
BRAKE SYSTEM	Power, Dual Piston Front/Single Piston Rear, Anti-Lock			
BRAKES, FRONT	TYPE Vented Disc		SWEPT AREA 282 sq. in.	
BRAKES, REAR	TYPE Vented Disc		SWEPT AREA 242 sq. in.	
FUEL CAPACITY	GALLONS 19		LITERS	72
GENERAL MEASUREMENTS	WHEELBASE 120 in.		LENGTH	200.1 in.
	TEST WEIGHT 4107		HEIGHT	58.2 in.
HEADROOM	FRONT 38.7 in.		REAR	36.2 in.
LEGROOM	FRONT 41.8 in.		REAR	40.2 in.
SHOULDER ROOM	FRONT 59.3 in.		REAR	57.6 in.
HIPROOM	FRONT 56.2 in.		REAR	55.5 in.
INTERIOR VOLUME	FRONT 55.5 cu. ft.		REAR	48.5 cu. ft.
	COMB 104 cu. ft.		TRUNK	16.2 cu. ft.
EPA MILEAGE EST. (MPG)	CITY 15	HIGHWAY 23		COMBINED 18

Dodge Magnum

3.5L SPFI



TEST VEHICLE DESCRIPTION

MAKE Dodge	MODEL Magnum		SALES CODE NO. 27A	
ENGINE DISPLACEMENT	CUBIC INCHES 214		LITERS	3.5
FUEL SYSTEM	Sequential Port Fuel Injection		EXHAUST	Single
HORSEPOWER (SAE NET)	250 @ 6400		ALTERNATOR	160 amp.
TORQUE	250 lbs-ft @ 3800		BATTERY	800 CCA
COMPRESSION RATIO	10.0:1			
TRANSMISSION	MODEL A580		TYPE 5 Speed Electronic Automatic	
	LOCKUP TORQUE CONVERTER? Yes			
	OVERDRIVE? Yes			
AXLE RATIO	2.87:1			
STEERING	Power Rack & Pinion			
TURNING CIRCLE (CURB TO CURB)	38.9			
TIRE SIZE, LOAD & SPEED RATING	Continental ProContact P225/60/R18 99V			
SUSPENSION TYPE (FRONT)	Independent High Arm SLA with Dual Ball Joint Lower, Coil Spring, Sway Bar			
SUSPENSION TYPE (REAR)	Independent Multi-Link, Coil Spring, Sway Bar			
GROUND CLEARANCE, MINIMUM	5.2 in.	LOCATION Fascia Belly Pan		
BRAKE SYSTEM	Power, Dual Piston Front/Single Piston Rear, Anti-Lock			
BRAKES, FRONT	TYPE Vented Disc		SWEPT AREA 282 sq. in.	
BRAKES, REAR	TYPE Vented Disc		SWEPT AREA 242 sq. in.	
FUEL CAPACITY	GALLONS 19		LITERS	72
GENERAL MEASUREMENTS	WHEELBASE 120 in.		LENGTH 197.7 in.	
	TEST WEIGHT 3998		HEIGHT 58.3 in.	
HEADROOM	FRONT	38.7 in.	REAR	38.1 in.
LEGROOM	FRONT	41.8 in.	REAR	40.2 in.
SHOULDER ROOM	FRONT	58.7 in.	REAR	57.6 in.
HIPROOM	FRONT	56.2 in.	REAR	56.1 in.
INTERIOR VOLUME	FRONT	55.0 cu. ft.		REAR 51.0 cu. ft.
	COMB	106.0 cu. ft.		*MAX. CARGO 71.5 cu. ft.
EPA MILEAGE EST. (MPG)	CITY 17	HIGHWAY 24		COMBINED 20

Dodge Magnum

5.7L SPFI



TEST VEHICLE DESCRIPTION

MAKE Dodge	MODEL Magnum		SALES CODE NO. 29A	
ENGINE DISPLACEMENT	CUBIC INCHES 345		LITERS	5.7
FUEL SYSTEM	Sequential Port Fuel Injection		EXHAUST	Dual
HORSEPOWER (SAE NET)	340 @ 5000		ALTERNATOR	160 amp.
TORQUE	390 lbs-ft @ 4000		BATTERY	800 CCA
COMPRESSION RATIO	9.7:1			
TRANSMISSION	MODEL A580		TYPE 5 Speed Electronic Automatic	
	LOCKUP TORQUE CONVERTER? Yes			
	OVERDRIVE? Yes			
AXLE RATIO	2.82:1			
STEERING	Power Rack & Pinion			
TURNING CIRCLE (CURB TO CURB)	38.9			
TIRE SIZE, LOAD & SPEED RATING	Continental ContiProContact P225/60/R18 99V			
SUSPENSION TYPE (FRONT)	Independent High Arm SLA with Dual Ball Joint Lower, Coil Spring, Sway Bar			
SUSPENSION TYPE (REAR)	Independent Multi-Link, Coil Spring, Sway Bar			
GROUND CLEARANCE, MINIMUM	5.2 in.	LOCATION Fascia Belly Pan		
BRAKE SYSTEM	Power, Dual Piston Front/Single Piston Rear, Anti-Lock			
BRAKES, FRONT	TYPE Vented Disc		SWEPT AREA 282 sq. in.	
BRAKES, REAR	TYPE Vented Disc		SWEPT AREA 242 sq. in.	
FUEL CAPACITY	GALLONS 19		LITERS	72
GENERAL MEASUREMENTS	WHEELBASE 120 in.		LENGTH 197.7 in.	
	TEST WEIGHT 4211		HEIGHT 58.3 in.	
HEADROOM	FRONT 38.7 in.		REAR	38.1 in.
LEGROOM	FRONT 41.8 in.		REAR	40.2 in.
SHOULDER ROOM	FRONT 58.7 in.		REAR	57.6 in.
HIPROOM	FRONT 56.2 in.		REAR	56.1 in.
INTERIOR VOLUME	FRONT 55.0 cu. ft.		REAR 51.0 cu. ft.	
	COMB 106.0 cu. ft.		Max. Cargo 71.5 cu. ft.	
EPA MILEAGE EST. (MPG)	CITY 15	HIGHWAY 23		COMBINED 18

TEST VEHICLE DESCRIPTION SUMMARY

	Ford Police Interceptor 3.27		Chevrolet Impala 9C1		Dodge Charger 3.5L	Dodge Magnum 3.5L
ENGINE DISPLACEMENT – CU. IN.	281		237		214	214
ENGINE DISPLACEMENT – LITERS	4.6		3.9		3.5	3.5
ENGINE FUEL SYSTEM	SMFI		SPFI		SPFI	SPFI
HORSEPOWER (SAE NET)	250		240		250	250
TORQUE (FT. LBS.)	297		240		250	250
COMPRESSION RATIO	9.4:1		9.4:1		10.0:1	10.0:1
AXLE RATIO	3.27		3.29:1		2.87:1	2.87:1
TURNING CIRCLE – FT. CURB TO CURB	40.3		38.0		38.9	38.9
TRANSMISSION	4 Speed elec. auto		4 Speed auto		5 Speed elec. auto	5 Speed elec. auto
TRANSMISSION MODEL NUMBER	4R70W		4T65E		A580	A580
LOCKUP TORQUE CONVERTER	Yes		Yes		Yes	Yes
TRANSMISSION OVERDRIVE	Yes		Yes		Yes	Yes
TIRE SIZE	P235/55R		P225/60R		P225/60R	P225/60
WHEEL RIM SIZE – INCHES	17		16		18	18
GROUND CLEARANCE – INCHES	5.6		7.1		5.2	5.2
BRAKE SYSTEM	Power, ABS		Power, ABS		Power, ABS	Power, ABS
BRAKES – FRONT TYPE	Vented Disc		Vented Disc		Vented Disc	Vented Disc
BRAKES – REAR TYPE	Vented Disc		Solid Disc		Vented Disc	Vented Disc
FUEL CAPACITY – GALLONS	19		17		19	19
FUEL CAPACITY – LITERS	71.9		64.3		72	72
OVERALL LENGTH – INCHES	212.0		200.4		200.1	197.7
OVERALL HEIGHT – INCHES	58.3		58.7		58.2	58.3
TEST WEIGHT – LBS.	4145		3714		3898	3998
WHEELBASE – INCHES	114.6		110.5		120	120
HEADROOM FRONT – INCHES	39.5		39.4		38.7	38.7
HEADROOM REAR – INCHES	37.8		37.8		36.2	38.1
LEGROOM FRONT – INCHES	41.6		42.3		41.8	41.8
LEGROOM REAR – INCHES	38.0		37.6		40.2	40.2
SHOULDER ROOM FRONT – INCHES	60.6		58.7		59.3	58.7
SHOULDER ROOM REAR – INCHES	60.0		58.6		57.6	57.6
HIPROOM FRONT – INCHES	57.4		56.4		56.2	56.2
HIPROOM REAR – INCHES	56.1		57.2		55.5	56.1
INTERIOR VOLUME FRONT – CU. FT.	57.6		56.5		55.5	55.0
INTERIOR VOLUME REAR – CU. FT.	48.8		55.7		48.5	51.0
INTERIOR VOLUME COMB. – CU. FT.	106.4		104.8		104	106.0
TRUNK VOLUME – CU. FT.	20.6		18.6		16.2	71.5
EPA MILEAGE – CITY – MPG	14	10	18	13	17	17
EPA MILEAGE – HIGHWAY – MPG	21	16	27	20	24	24
EPA MILEAGE – COMBINED – MPG	16	12	21	16	20	20

TEST VEHICLE DESCRIPTION SUMMARY

	Dodge Charger 5.7L	Ford Police Interceptor 3.55	Chevrolet Tahoe PPV		Dodge Magnum 5.7L
ENGINE DISPLACEMENT – CU. IN.	345	281	327		345
ENGINE DISPLACEMENT – LITERS	5.7	4.6	5.3		5.7
ENGINE FUEL SYSTEM	SPFI	SMFI	SPFI		SPFI
HORSEPOWER (SAE NET)	340	250	320		340
TORQUE (FT. LBS.)	390	297	340		390
COMPRESSION RATIO	9.7:1	9.4:1	9.5:1		9.7:1
AXLE RATIO	2.82:1	3.55	3.73		2.82:1
TURNING CIRCLE – FT. CURB TO CURB	38.9	40.3	39.0		38.9
TRANSMISSION	5 Speed elec. auto	4 Speed elec. auto	4-Speed Automatic Overdrive		5 Speed elec. auto
TRANSMISSION MODEL NUMBER	A580	4R70W	4L60E		A580
LOCKUP TORQUE CONVERTER	Yes	Yes	Yes		Yes
TRANSMISSION OVERDRIVE	Yes	Yes	Yes		Yes
TIRE SIZE	P225/60R	P235/55R	P265/60R		P225/60R
WHEEL RIM SIZE – INCHES	18	17	17		18
GROUND CLEARANCE – INCHES	5.2	5.6	8.00		5.2
BRAKE SYSTEM	Power, ABS	Power, ABS	Power, ABS		Power, ABS
BRAKES – FRONT TYPE	Vented Disc	Vented Disc	Disc		Vented Disc
BRAKES – REAR TYPE	Vented Disc	Vented Disc	Disc		Vented Disc
FUEL CAPACITY – GALLONS	19	19	26		19
FUEL CAPACITY – LITERS	72	71.9	98.4		72
OVERALL LENGTH – INCHES	200.1	212.0	198.9		197.7
OVERALL HEIGHT – INCHES	58.2	58.3	73.9		58.3
TEST WEIGHT – LBS.	4107	4128	5273		4211
WHEELBASE – INCHES	120	114.6	116		120
HEADROOM FRONT – INCHES	38.7	39.5	40.3		38.7
HEADROOM REAR – INCHES	36.2	37.8	39.2		38.1
LEGROOM FRONT – INCHES	41.8	41.6	41.3		41.8
LEGROOM REAR – INCHES	40.2	38.0	39.0		40.2
SHOULDER ROOM FRONT – INCHES	59.3	60.6	65.3		58.7
SHOULDER ROOM REAR – INCHES	57.6	60.0	65.2		57.6
HIPROOM FRONT – INCHES	56.2	57.4	64.4		56.2
HIPROOM REAR – INCHES	55.5	56.1	60.6		56.1
INTERIOR VOLUME FRONT – CU. FT.	55.5	57.6	62.9		55.0
INTERIOR VOLUME REAR – CU. FT.	48.5	48.8	57.68		51.0
INTERIOR VOLUME COMB. – CU. FT.	104	106.4	120.58		106.0
TRUNK VOLUME – CU. FT.	16.2	20.6	108.9		71.5
EPA MILEAGE – CITY – MPG	15	14	14	11	15
EPA MILEAGE – HIGHWAY – MPG	23	21	19	14	23
EPA MILEAGE – COMBINED – MPG	18	16	16	12	18

VEHICLE DYNAMICS TESTING

TEST OBJECTIVE

Determine each vehicle's high-speed pursuit or emergency handling characteristics and performance in comparison to the other vehicles in the test group. The course used is a 2-mile road-racing type configuration, containing hills, curves, and corners. The course simulates actual conditions encountered in pursuit or emergency driving situations in the field, with the exception of other traffic. The evaluation is a true test of the success or failure of the vehicle manufacturers to offer vehicles that provide the optimum balance between handling (suspension components), acceleration (usable horsepower), and braking characteristics.

TEST METHODOLOGY

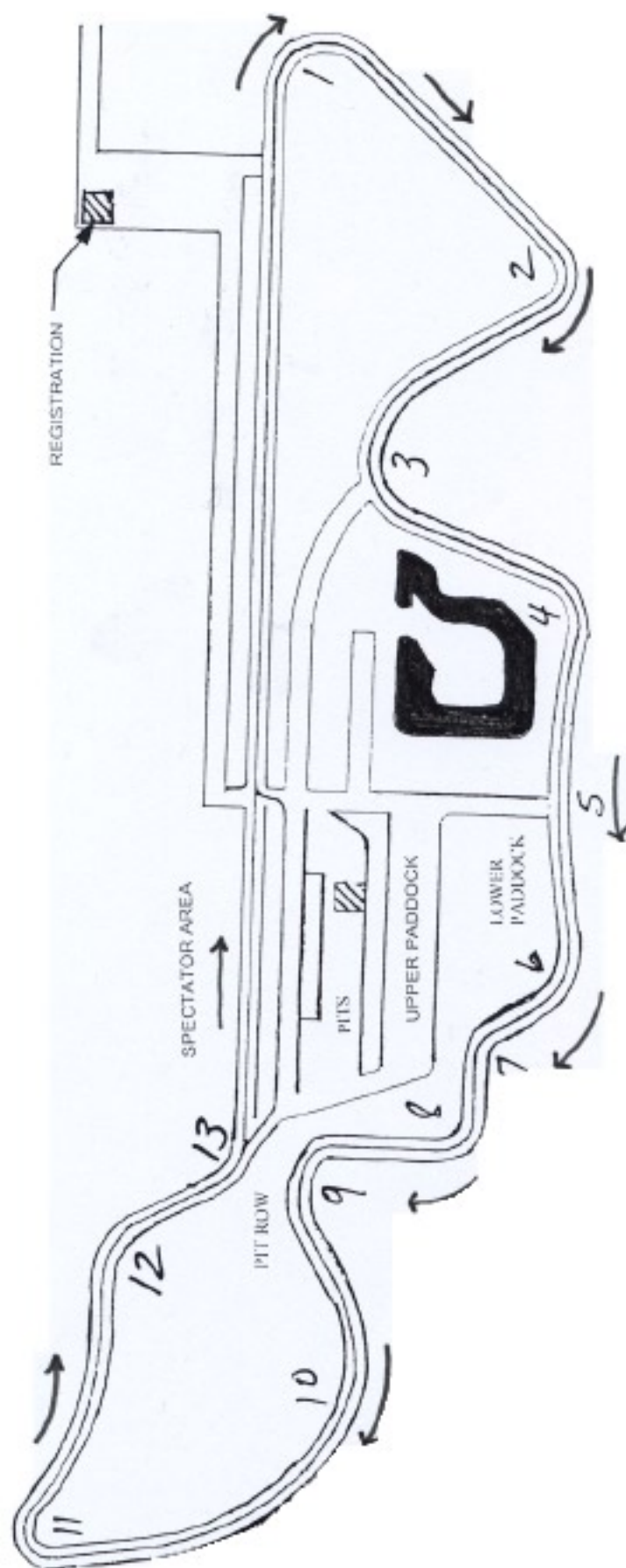
Each vehicle is driven over the course a total of 32 timed laps, using four separate drivers, each driving an 8 lap series. The final score for the vehicle is the combined average (from the 4 drivers) of the 5 fastest laps for each driver during the 8 lap series.



Grattan Raceway Park



7201 Lessiter
Belding, Michigan 48809



Arrows indicate
Michigan State Police
Road Test Course and
Direction of Travel.

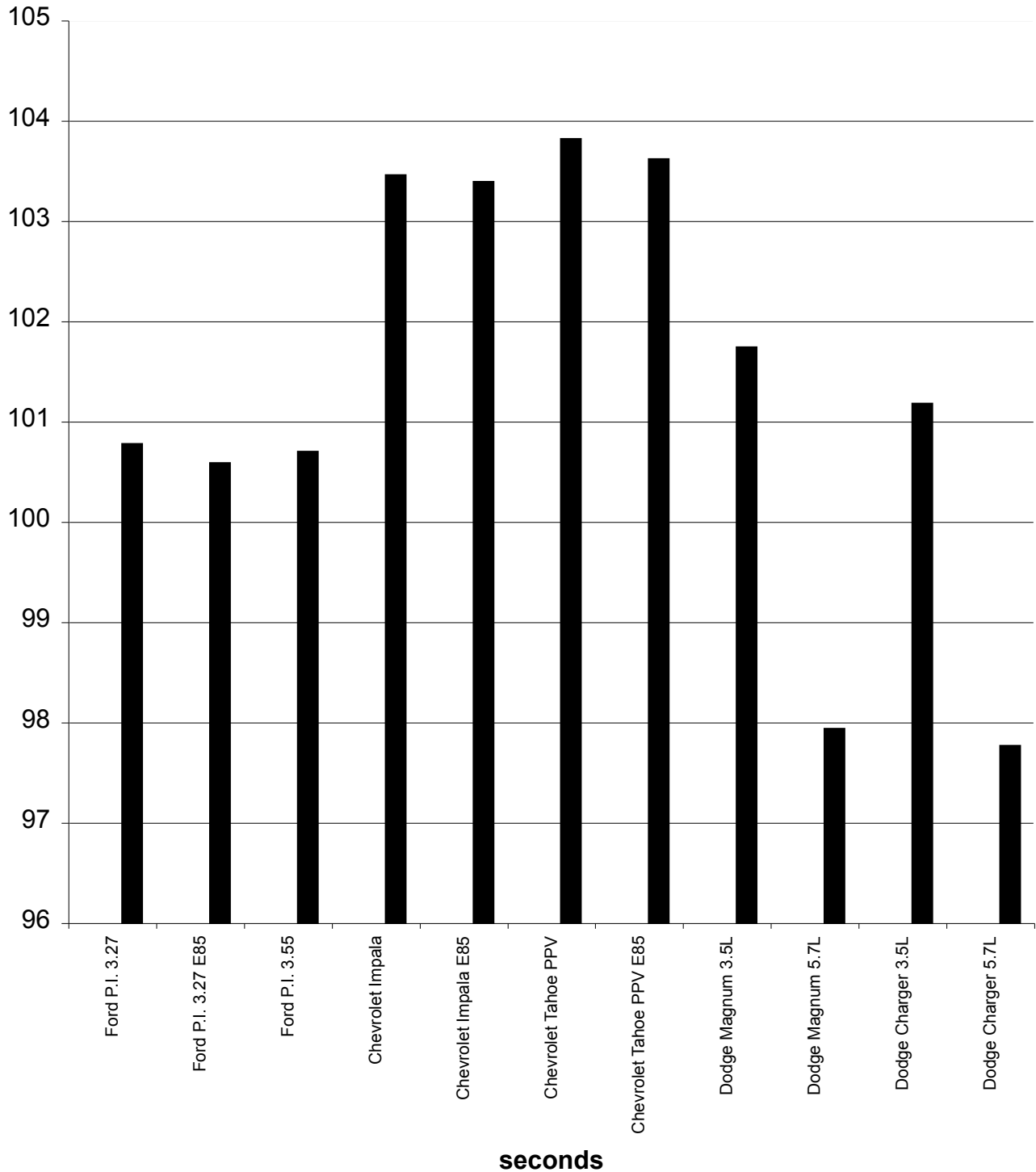
VEHICLE DYNAMICS TESTING

Vehicles	Drivers	Lap 1	Lap 2	Lap 3	Lap 4	Lap 5	Average
Ford Police Interceptor 3:27 SPFI	GROMAK	01:39.60	01:39.80	01:39.90	01:40.00	01:40.10	01:39.88
	ROGERS	01:40.90	01:40.90	01:41.00	01:41.00	01:41.10	01:40.98
	WILSON	01:40.90	01:41.20	01:41.40	01:41.70	01:41.80	01:41.40
	FLEGEL	01:40.50	01:40.80	01:40.80	01:41.00	01:41.20	01:40.86
Overall Average							01:40.78
Ford Police Interceptor 3:27 E85 SPFI	GROMAK	01:39.70	01:39.70	01:39.80	01:39.90	01:40.00	01:39.82
	ROGERS	01:40.60	01:40.80	01:40.80	01:40.90	01:41.00	01:40.82
	WILSON	01:41.20	01:41.30	01:41.40	01:41.40	01:41.50	01:41.36
	FLEGEL	01:40.00	01:40.30	01:40.50	01:40.50	01:40.60	01:40.38
Overall Average							01:40.59
Ford Police Interceptor 3:55 SPFI	GROMAK	01:39.70	01:39.90	01:40.00	01:40.50	01:41.40	01:40.30
	ROGERS	01:40.40	01:40.80	01:40.80	01:40.90	01:41.10	01:40.80
	WILSON	01:41.30	01:41.40	01:41.40	01:41.50	01:41.80	01:41.48
	FLEGEL	01:39.90	01:40.10	01:40.20	01:40.30	01:40.60	01:40.22
Overall Average							01:40.70
Chevrolet Impala 9C1 3.9L SPFI	GROMAK	01:43.20	01:43.50	01:43.90	01:43.90	01:44.00	01:43.70
	ROGERS	01:43.40	01:43.80	01:43.90	01:44.00	01:44.10	01:43.84
	WILSON	01:43.50	01:44.00	01:44.30	01:44.40	01:44.40	01:44.12
	FLEGEL	01:41.80	01:42.00	01:42.10	01:42.50	01:42.60	01:42.20
Overall Average							01:43.46
Chevrolet Impala 9C1 3.9L E85 SPFI	GROMAK	01:43.60	01:43.70	01:43.80	01:43.90	01:44.20	01:43.84
	ROGERS	01:42.60	01:42.90	01:43.20	01:43.30	01:43.40	01:43.08
	WILSON	01:42.50	01:42.70	01:42.90	01:43.50	01:43.70	01:43.06
	FLEGEL	01:43.10	01:43.20	01:43.70	01:44.00	01:44.00	01:43.60
Overall Average							01:43.39

VEHICLE DYNAMICS TESTING

Vehicles	Drivers	Lap 1	Lap 2	Lap 3	Lap 4	Lap 5	Average
Chevrolet Tahoe PPV 2WD	GROMAK	01:43.20	01:43.50	01:43.70	01:43.80	01:43.90	01:43.62
	ROGERS	01:43.40	01:43.80	01:43.80	01:43.80	01:43.80	01:43.72
	WILSON	01:44.00	01:44.00	01:44.40	01:44.40	01:44.50	01:44.26
	FLEGEL	01:43.40	01:43.60	01:43.80	01:43.80	01:43.80	01:43.68
Overall Average							01:43.82
Chevrolet Tahoe PPV 2WD E85	GROMAK	01:42.30	01:42.70	01:42.80	01:43.10	01:43.20	01:42.82
	ROGERS	01:43.60	01:43.70	01:43.80	01:43.90	01:44.00	01:43.80
	WILSON	01:43.70	01:43.70	01:44.00	01:44.30	01:44.30	01:44.00
	FLEGEL	01:43.60	01:43.80	01:43.90	01:44.00	01:44.10	01:43.88
Overall Average							01:43.62
Dodge Magnum 3.5L SPFI	GROMAK	01:41.10	01:41.20	01:41.40	01:41.50	01:41.50	01:41.34
	ROGERS	01:42.20	01:42.20	01:42.20	01:42.30	01:42.30	01:42.24
	WILSON	01:42.30	01:42.30	01:42.40	01:42.50	01:42.60	01:42.42
	FLEGEL	01:40.60	01:40.80	01:41.00	01:41.10	01:41.20	01:40.94
Overall Average							01:41.74
Dodge Magnum 5.7L SPFI	GROMAK	01:36.90	01:36.90	01:37.30	01:37.50	01:37.50	01:37.22
	ROGERS	01:37.40	01:37.70	01:37.70	01:37.90	01:38.00	01:37.74
	WILSON	01:38.30	01:38.40	01:38.70	01:38.90	01:38.90	01:38.64
	FLEGEL	01:38.00	01:38.00	01:38.10	01:38.20	01:38.40	01:38.14
Overall Average							01:37.94
Dodge Charger 3.5L SPFI	GROMAK	01:40.70	01:40.80	01:40.90	01:40.90	01:41.10	01:40.88
	ROGERS	01:41.40	01:41.40	01:41.50	01:41.60	01:41.70	01:41.52
	WILSON	01:41.30	01:41.50	01:41.50	01:41.70	01:41.70	01:41.54
	FLEGEL	01:40.60	01:40.70	01:40.70	01:40.70	01:41.20	01:40.78
Overall Average							01:41.18
Dodge Charger 5.7L SPFI	GROMAK	01:36.20	01:36.70	01:36.80	01:36.90	01:37.00	01:36.72
	ROGERS	01:37.30	01:37.40	01:37.40	01:37.50	01:38.00	01:37.52
	WILSON	01:38.90	01:39.00	01:39.60	01:39.60	01:39.70	01:39.36
	FLEGEL	01:37.30	01:37.40	01:37.40	01:37.60	01:37.70	01:37.48
Overall Average							01:37.77

2008 Vehicle Dynamics



ACCELERATION AND TOP SPEED TESTING

ACCELERATION TEST OBJECTIVE

Determine the ability of each test vehicle to accelerate from a standing start to 60 mph, 80 mph, and 100 mph, and determine the distance to reach 110 mph and 120 mph.

ACCELERATION TEST METHODOLOGY

Using a DLS Smart Sensor – Optical non-contact Speed and Distance Sensor in conjunction with a lap top computer, each vehicle is driven through four acceleration sequences, two northbound and two southbound, to allow for wind direction. The four resulting times for each target speed are averaged and the average times used to derive scores on the competitive test for acceleration.

TOP SPEED TEST OBJECTIVE

Determine the actual top speed attainable by each test vehicle within a distance of 14 miles from a standing start.

TOP SPEED TEST METHODOLOGY

Following the fourth acceleration run, each test vehicle continues to accelerate to the top speed attainable within 14 miles from the start of the run. The highest speed attained within the 14-mile distance is the vehicle's score on the competitive test for top speed.

ACCELERATION AND TOP SPEED TESTS

TEST LOCATION: Chrysler Proving Grounds

DATE: September 15, 2007

MAKE & MODEL: Ford Interceptor 4.6L 3.27

BEGINNING TIME: 8:36 a.m.

WIND VELOCITY: 8.3 mph

WIND DIRECTION: 332°

TEMPERATURE: 43.7°

ACCELERATION

SPEEDS	TIME REQUIREMENTS*	RUN#1	RUN#2	RUN#3	RUN#4	AVERAGE
0 – 60	9.6 sec	8.36	8.40	8.37	8.29	8.36
0 – 80	16.4 sec.	13.61	13.61	13.67	13.63	13.63
0 – 100	27.1 sec.	22.45	22.96	22.62	22.85	22.72

DISTANCE TO REACH: 110 MPH .62 mile

120 MPH 1.00 mile

TOP SPEED ATTAINED: 129 mph

MAKE & MODEL: Ford Police Interceptor 4.6L 3.55

BEGINNING TIME: 10:14 a.m.

WIND VELOCITY: 5.1 mph

WIND DIRECTION: 358°

TEMPERATURE: 49.2°

ACCELERATION

SPEEDS	TIME REQUIREMENTS*	RUN#1	RUN#2	RUN#3	RUN#4	AVERAGE
0 – 60	9.6 sec	8.15	8.24	8.12	8.17	8.17
0 – 80	16.4 sec.	13.43	13.82	13.46	13.70	13.60
0 – 100	27.1 sec.	21.45	23.12	21.47	22.76	22.20

DISTANCE TO REACH: 110 MPH .61 mile

120 MPH 1.66

TOP SPEED ATTAINED: 120 mph

*Michigan State Police minimum requirement.

ACCELERATION AND TOP SPEED TESTS

TEST LOCATION: Chrysler Proving Grounds

DATE: September 15, 2007

MAKE & MODEL: Ford Interceptor 4.6L 3.27 E85

BEGINNING TIME: 12:54 p.m.

WIND VELOCITY: 5.2 mph

WIND DIRECTION: 252°

TEMPERATURE: 54.7°

ACCELERATION

SPEEDS	TIME REQUIREMENTS*	RUN#1	RUN#2	RUN#3	RUN#4	AVERAGE
0 – 60	9.6 sec	8.26	8.33	8.16	8.24	8.25
0 – 80	16.4 sec.	13.46	13.55	13.07	13.50	13.40
0 – 100	27.1 sec.	22.21	22.75	21.58	22.60	22.29

DISTANCE TO REACH: 110 MPH .60 mile

120 MPH .97 mile

TOP SPEED ATTAINED: 129 mph

MAKE & MODEL: Chevrolet Impala 9C1

BEGINNING TIME: 10:50 a.m.

WIND VELOCITY: 15.4 mph

WIND DIRECTION: 311°

TEMPERATURE: 51.4°

ACCELERATION

SPEEDS	TIME REQUIREMENTS*	RUN#1	RUN#2	RUN#3	RUN#4	AVERAGE
0 – 60	9.6 sec	8.28	8.20	8.16	8.30	8.24
0 – 80	16.4 sec.	13.20	13.20	12.86	13.38	13.16
0 – 100	27.1 sec.	21.64	22.07	21.01	21.98	21.68

DISTANCE TO REACH: 110 MPH .57 mile

120 MPH .80

TOP SPEED ATTAINED: 142 mph

*Michigan State Police minimum requirement.

ACCELERATION AND TOP SPEED TESTS

TEST LOCATION: Chrysler Proving Grounds

DATE: September 15, 2007

MAKE & MODEL: Chevrolet Impala 9C1 E85

BEGINNING TIME: 1:29 p.m.

WIND VELOCITY: 10.6 mph

WIND DIRECTION: 325°

TEMPERATURE: 55.8°

ACCELERATION

SPEEDS	TIME REQUIREMENTS*	RUN#1	RUN#2	RUN#3	RUN#4	AVERAGE
0 – 60	9.6 sec	8.41	8.27	8.20	8.22	8.28
0 – 80	16.4 sec.	13.34	13.17	13.08	13.17	13.19
0 – 100	27.1 sec.	21.85	21.51	21.38	21.70	21.61

DISTANCE TO REACH: 110 MPH .57 mile

120 MPH .80 mile

TOP SPEED ATTAINED: 141 mph

MAKE & MODEL: Dodge Charger 5.7L

BEGINNING TIME: 2:29 p.m.

WIND VELOCITY: 8.2 mph

WIND DIRECTION: 305°

TEMPERATURE: 56.2°

ACCELERATION

SPEEDS	TIME REQUIREMENTS*	RUN#1	RUN#2	RUN#3	RUN#4	AVERAGE
0 – 60	9.6 sec	6.30	6.20	6.26	6.21	6.24
0 – 80	16.4 sec.	10.25	10.15	10.04	10.01	10.11
0 – 100	27.1 sec.	15.39	15.22	15.05	15.09	15.19

DISTANCE TO REACH: 110 MPH .35 mile

120 MPH .50 mile

TOP SPEED ATTAINED: 148 mph

*Michigan State Police minimum requirement.

ACCELERATION AND TOP SPEED TESTS

TEST LOCATION: Chrysler Proving Grounds

DATE: September 15, 2007

MAKE & MODEL: Dodge Charger 3.5L

BEGINNING TIME: 11:23 a.m.

WIND VELOCITY: 10.4 mph

WIND DIRECTION: 319°

TEMPERATURE: 52.6°

ACCELERATION

SPEEDS	TIME REQUIREMENTS*	RUN#1	RUN#2	RUN#3	RUN#4	AVERAGE
0 – 60	9.6 sec	8.78	8.74	8.55	8.66	8.68
0 – 80	16.4 sec.	14.20	14.36	13.87	14.15	14.15
0 – 100	27.1 sec.	23.14	23.77	22.48	23.20	23.15

DISTANCE TO REACH: 110 MPH .60 mile

120 MPH .89 mile

TOP SPEED ATTAINED: 132 mph

MAKE & MODEL: Dodge Magnum 5.7

BEGINNING TIME: 9:46 a.m.

WIND VELOCITY: 5.6 mph

WIND DIRECTION: 324°

TEMPERATURE: 48.0°

ACCELERATION

SPEEDS	TIME REQUIREMENTS*	RUN#1	RUN#2	RUN#3	RUN#4	AVERAGE
0 – 60	9.6 sec	6.66	6.32	6.23	6.20	6.35
0 – 80	16.4 sec.	10.89	10.48	10.21	10.17	10.44
0 – 100	27.1 sec.	16.45	16.01	15.25	15.58	15.82

DISTANCE TO REACH: 110 MPH .37 mile

120 MPH .55 mile

TOP SPEED ATTAINED: 131 mph

*Michigan State Police minimum requirement.

ACCELERATION AND TOP SPEED TESTS

TEST LOCATION: Chrysler Proving Grounds

DATE: September 15, 2007

MAKE & MODEL: Dodge Magnum 3.5L

BEGINNING TIME: 5:30 p.m.

WIND VELOCITY: 5.3 mph

WIND DIRECTION: 300°

TEMPERATURE: 56.3°

ACCELERATION

SPEEDS	TIME REQUIREMENTS*	RUN#1	RUN#2	RUN#3	RUN#4	AVERAGE
0 – 60	9.6 sec	8.96	8.83	8.70	8.73	8.81
0 – 80	16.4 sec.	14.67	14.46	14.21	14.33	14.42
0 – 100	27.1 sec.	24.36	24.27	23.31	23.88	23.96

DISTANCE TO REACH: 110 MPH .64 mile

120 MPH .94 mile

TOP SPEED ATTAINED: 132 mph

MAKE & MODEL: Chevrolet Tahoe PPV

BEGINNING TIME: 9:11 a.m.

WIND VELOCITY: 9.2 mph

WIND DIRECTION: 345°

TEMPERATURE: 46.1°

ACCELERATION

SPEEDS	TIME REQUIREMENTS*	RUN#1	RUN#2	RUN#3	RUN#4	AVERAGE
0 – 60	10.0 sec	8.30	8.30	8.18	8.18	8.24
0 – 80	16.0 sec.	13.49	13.76	13.32	13.48	13.51
0 – 100	27.0 sec.	22.59	23.42	22.16	23.00	22.79

DISTANCE TO REACH: 110 MPH .60 mile

120 MPH .88 mile

TOP SPEED ATTAINED: 127 mph

*Michigan State Police minimum requirement.

ACCELERATION AND TOP SPEED TESTS

TEST LOCATION: Chrysler Proving Grounds

DATE: September 15, 2007

MAKE & MODEL: Chevrolet Tahoe PPV E85

BEGINNING TIME: 2:02 p.m.

WIND VELOCITY: 4.7 mph

WIND DIRECTION: 275°

TEMPERATURE: 55.5°

ACCELERATION

SPEEDS	TIME REQUIREMENTS*	RUN#1	RUN#2	RUN#3	RUN#4	AVERAGE
0 – 60	10.0 sec	8.15	8.21	8.01	8.15	8.13
0 – 80	16.0 sec.	13.24	13.56	13.21	13.23	13.31
0 – 100	27.0 sec.	22.19	22.97	21.74	22.26	22.29

DISTANCE TO REACH: 110 MPH .58 mile

120 MPH .81 mile

TOP SPEED ATTAINED: 127 mph

*Michigan State Police minimum requirement.



SUMMARY OF ACCELERATION AND TOP SPEED

ACCELERATION*	Ford Police Interceptor 4.6 L 3.27	Dodge Charger 3.5 L	Chevrolet Impala 9C1 3.9 L	Dodge Magnum 3.5 L	Chevrolet Tahoe PPV
0 – 20 mph (sec.)	1.78	2.02	1.92	2.04	2.00
0 – 30 mph (sec.)	3.02	3.33	3.08	3.40	3.18
0 – 40 mph (sec.)	4.35	4.74	4.32	4.82	4.41
0 – 50 mph (sec.)	6.19	6.48	6.02	6.56	6.18
0 – 60 mph (sec.)	8.36	8.68	8.24	8.81	8.24
0 – 70 mph (sec.)	10.75	11.28	10.56	11.46	10.47
0 – 80 mph (sec.)	13.63	14.15	13.16	14.42	13.51
0 – 90 mph (sec.)	17.68	18.28	16.69	18.76	17.87
0 – 100 mph (sec.)	22.72	23.15	21.68	23.96	22.79
TOP SPEED (mph)	129	132	142	132	127
DISTANCE TO REACH					
110 mph (miles)	.62	.60	.57	.64	.60
120 mph (miles)	1.00	.89	.80	.94	.88
QUARTER MILE					
Time (sec.)	16.35	16.68	16.25	16.78	16.35
Speed (miles)	87.03	86.28	89.13	85.53	86.60



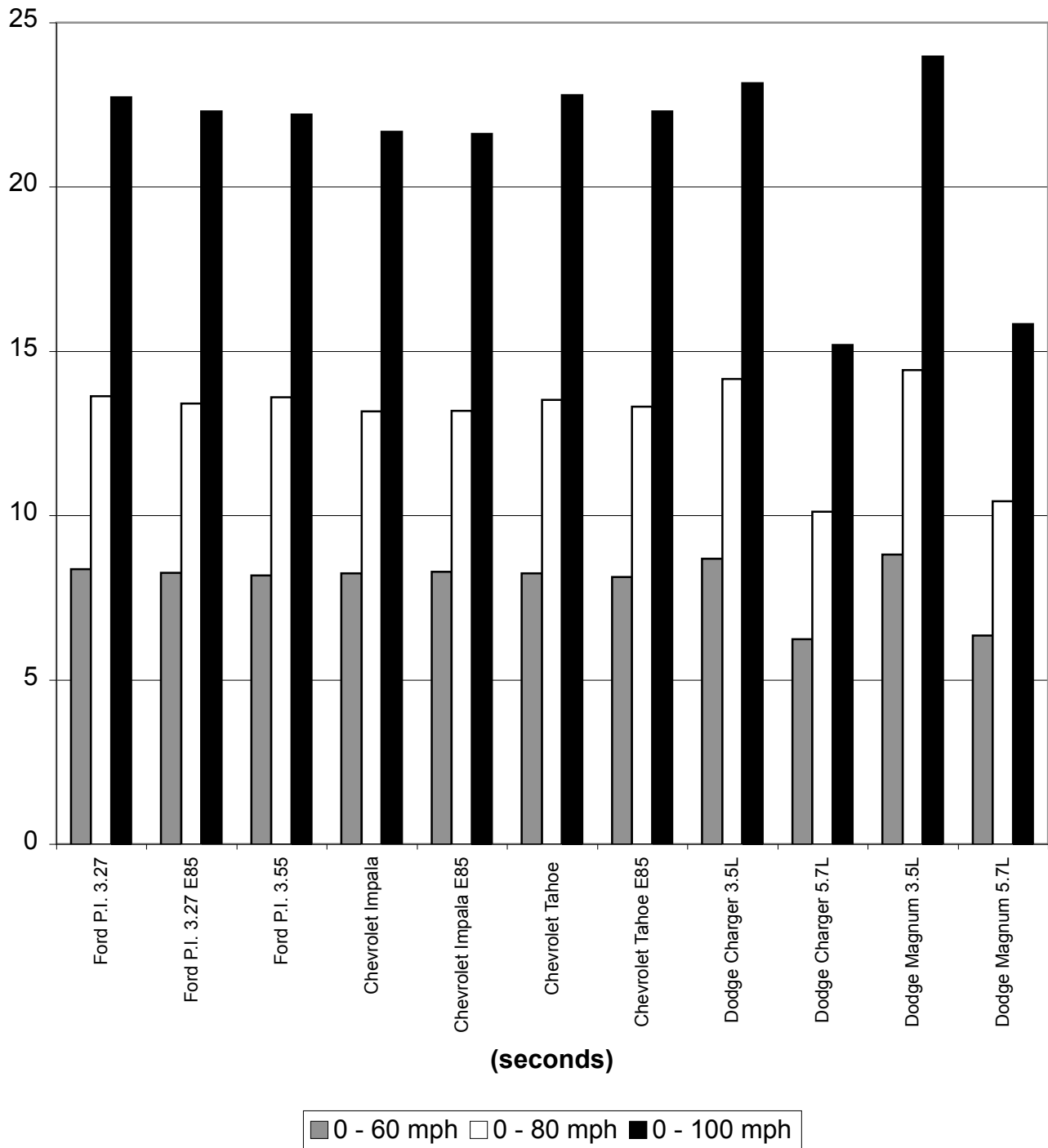
SUMMARY OF ACCELERATION AND TOP SPEED

ACCELERATION*	Ford Police Interceptor 4.6 L 3.55	Dodge Charger 5.7 L	Dodge Magnum 5.7 L	Ford Police Interceptor 4.6L 3.27 E85	Chevrolet Impala 9C1 3.9L E85	Chevrolet Tahoe PPV E85
0 – 20 mph (sec.)	1.77	1.58	1.56	1.82	1.95	1.95
0 – 30 mph (sec.)	2.94	2.55	2.52	3.03	3.11	3.12
0 – 40 mph (sec.)	4.28	3.50	3.47	4.34	4.36	4.33
0 – 50 mph (sec.)	6.20	4.81	4.84	6.20	6.04	6.08
0 – 60 mph (sec.)	8.17	6.24	6.35	8.25	8.28	8.13
0 – 70 mph (sec.)	10.54	7.87	8.04	10.55	10.63	10.29
0 – 80 mph (sec.)	13.60	10.11	10.44	13.40	13.19	13.31
0 – 90 mph (sec.)	17.50	12.50	12.98	17.46	16.82	17.62
0 – 100 mph (sec.)	22.20	15.19	15.82	22.29	21.61	22.29
TOP SPEED (mph)	120	148	131	129	141	127
DISTANCE TO REACH						
110 mph (miles)	.61	.35	.37	.60	.57	.58
120 mph (miles)	1.66	.50	.55	.97	.80	.81
QUARTER MILE						
Time (sec.)	16.29	14.73	14.84	16.30	16.29	16.26
Speed (miles)	87.03	98.35	96.83	87.40	88.75	87.03

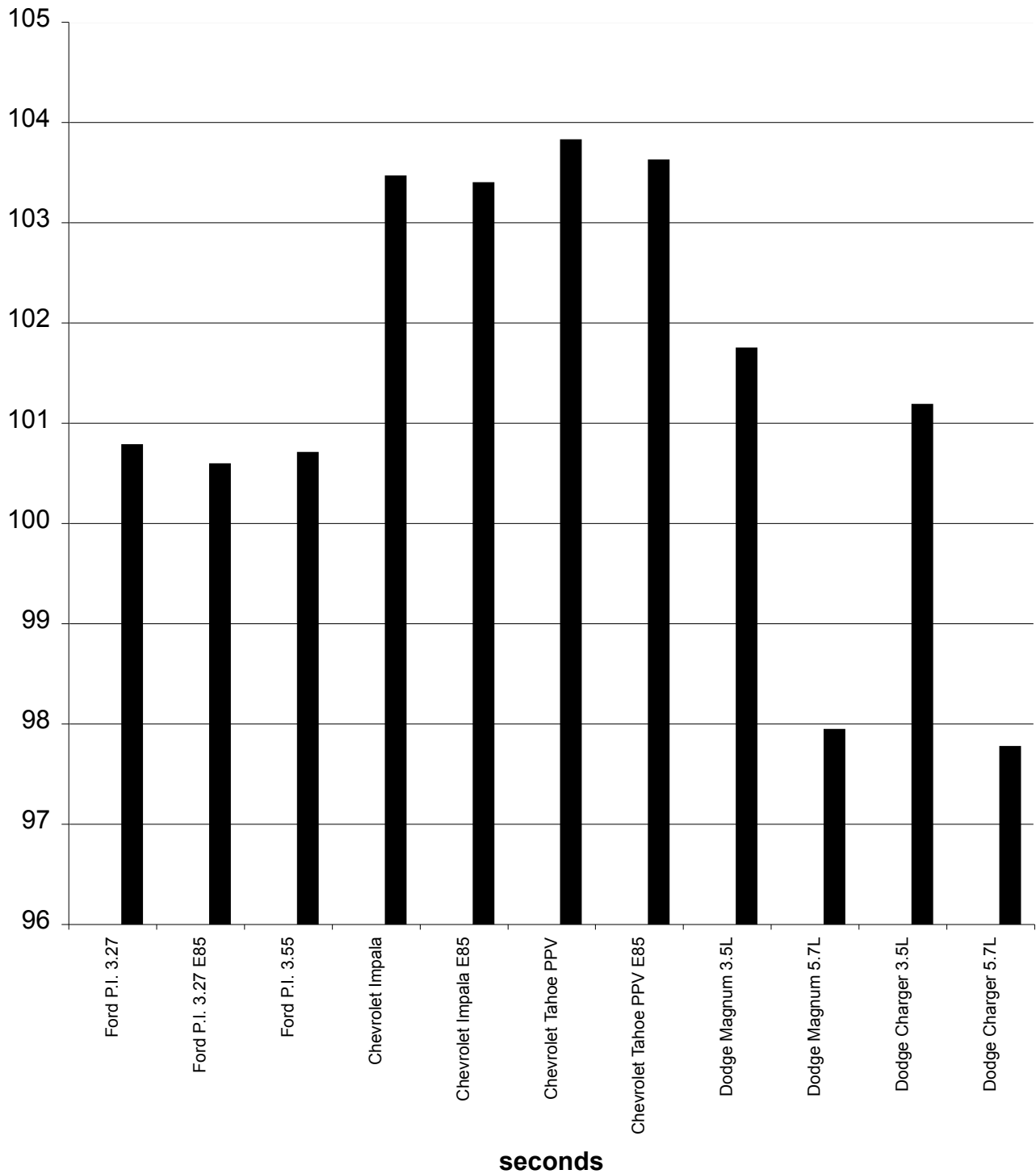


2008 ACCELERATION COMPARISON

ACCELERATION TIMES



2008 Vehicle Dynamics



BRAKE TESTING

BRAKE TEST OBJECTIVE

Determine the deceleration rate attained by each test vehicle on twelve 60 – 0 mph impending skid (threshold) stops, with ABS in operation if the vehicle is so equipped. Each vehicle is scored on the average deceleration rate it attains.

BRAKE TEST METHODOLOGY

Each vehicle makes two decelerations at specific predetermined points on the test road from 90 – 0 mph at 22 ft/s², with the driver using a decelerometer to maintain the deceleration rate. Immediately after these “heat-up” stops are completed, the vehicle is turned around and makes six measured 60 – 0 mph impending skid (threshold) stops with ABS in operation, if so equipped, at specific predetermined points. Following a four (4) minute heat soak, the entire sequence is repeated. The exact initial velocity at the beginning of each of the 60 – 0 mph decelerations, and the exact distance required to make each stop is recorded by means of a non contact optical sensor in conjunction with electronic speed and distance meters. The data resulting from the twelve total stops is used to calculate the average deceleration rate which is the vehicle’s score for this test.

DECELERATION RATE FORMULA

$$\text{Deceleration Rate (DR)} = \frac{\text{Initial Velocity}^2 \text{ (IV squared)}}{2 \text{ times Stopping Distance (SD)}} = \frac{(\text{IV})^2}{2 (\text{SD})}$$

EXAMPLE:

$$\begin{aligned} \text{Initial Velocity} &= 89.175 \text{ ft/s (60.8 mph x 1.4667*)} \\ \text{Stopping Distance} &= 171.4 \text{ ft.} \end{aligned}$$

$$\text{DR} = \frac{(\text{IV})^2}{2(\text{SD})} = \frac{(89.175)^2}{2(171.4)} = \frac{7952.24}{342.8} = 23.198 \text{ ft/s}^2$$

Once a vehicle’s average deceleration rate has been determined, it is possible to calculate the stopping distance from any given speed by utilizing the following formula:

Select a speed; translate that speed into feet per second; square the feet per second figure by multiplying it by itself; divide the resultant figure by 2; divide the remaining figure by the average deceleration rate of the vehicle in question.

EXAMPLE:

$$60 \text{ mph} = 88.002 \text{ ft/s} \times 88.002 = 7744.352 / 2 = 3872.176 / 23.198 \text{ ft/s}^2 = 166.9 \text{ ft.}$$

*Initial velocity must be expressed in terms of feet per second, with 1 mile per hour being equal to 1.4667 feet per second.

BRAKE TESTING

TEST LOCATION: Chrysler Proving Grounds

DATE: September 15, 2007

BEGINNING Time: 9:05 a.m.

TEMPERATURE: 45.7°F

MAKE & MODEL: Ford Police Interceptor 4.6L 3.27

BRAKE SYSTEM: Anti-lock

Phase I

BRAKE HEAT-UP: (Two 90 → 0 mph decelerations @ 22 ft./sec.²)

TEST: (Six 60 → mph impending skid (ABS) maximum deceleration rate stops)

	Initial Velocity	Stopping Distance	Deceleration Rate
Stop #1	60.5 mph	146.9 feet	26.78 ft/s ²
Stop #2	59.7 mph	142.5 feet	26.85 ft/s ²
Stop #3	60.3 mph	147.3 feet	26.58 ft/s ²
Stop #4	60.7 mph	143.5 feet	27.62 ft/s ²
Stop #5	60.4 mph	145.3 feet	27.04 ft/s ²
Stop #6	60.8 mph	150.2 feet	26.46 ft/s ²

AVERAGE DECELERATION RATE

26.89 ft/s²

HEAT SOAK (4 minutes)

Phase II

BRAKE HEAT-UP: (Two 90 → 0 mph decelerations @ 22 ft./sec.²)

TEST: (Six 60 → mph impending skid (ABS) maximum deceleration rate stops)

	Initial Velocity	Stopping Distance	Deceleration Rate
Stop #1	60.2 mph	146.1 feet	26.71 ft/s ²
Stop #2	60.3 mph	143.4 feet	27.30 ft/s ²
Stop #3	60.0 mph	144.2 feet	26.82 ft/s ²
Stop #4	60.5 mph	147.6 feet	26.68 ft/s ²
Stop #5	60.5 mph	147.2 feet	26.72 ft/s ²
Stop #6	60.6 mph	140.8 feet	28.02 ft/s ²

AVERAGE DECELERATION RATE

27.04 ft/s²

Phase III

	Yes/No
Evidence of severe fading?	<u>No</u>
Vehicle stopped in straight line?	<u>Yes</u>
Vehicle stopped within correct lane?	<u>Yes</u>

OVERALL AVERAGE DECEL. RATE:

26.97 ft/s²

Projected Stopping Distance from 60.0 mph 143.6

BRAKE TESTING

TEST LOCATION: Chrysler Proving Grounds

DATE: September 15, 2007

BEGINNING Time: 11:10 a.m.

TEMPERATURE: 51.7°F

MAKE & MODEL: Ford Police Interceptor 4.6L 3.55

BRAKE SYSTEM: Anti-lock

Phase I

BRAKE HEAT-UP: (Two 90 → 0 mph decelerations @ 22 ft.sec.²)

TEST: (Six 60 → mph impending skid (ABS) maximum deceleration rate stops)

	Initial Velocity	Stopping Distance	Deceleration Rate
Stop #1	60.3 mph	148.0 feet	26.40 ft/s ²
Stop #2	60.5 mph	150.1 feet	26.20 ft/s ²
Stop #3	60.1 mph	147.6 feet	26.31 ft/s ²
Stop #4	59.5 mph	143.4 feet	26.58 ft/s ²
Stop #5	59.7 mph	145.7 feet	26.27 ft/s ²
Stop #6	61.0 mph	152.4 feet	26.27 ft/s ²

AVERAGE DECELERATION RATE

26.34 ft/s²

HEAT SOAK (4 minutes)

Phase II

BRAKE HEAT-UP: (Two 90 → 0 mph decelerations @ 22 ft.sec.²)

TEST: (Six 60 → mph impending skid (ABS) maximum deceleration rate stops)

	Initial Velocity	Stopping Distance	Deceleration Rate
Stop #1	61.2 mph	153.7 feet	26.24 ft/s ²
Stop #2	59.7 mph	144.7 feet	26.46 ft/s ²
Stop #3	60.0 mph	148.6 feet	26.03 ft/s ²
Stop #4	60.5 mph	153.5 feet	25.63 ft/s ²
Stop #5	60.3 mph	148.3 feet	26.40 ft/s ²
Stop #6	60.3 mph	155.7 feet	25.08 ft/s ²

AVERAGE DECELERATION RATE

25.98 ft/s²

Phase III

Evidence of severe fading?

Yes/No

No

Vehicle stopped in straight line?

Yes

Vehicle stopped within correct lane?

Yes

OVERALL AVERAGE DECEL. RATE:

26.16 ft/s²

Projected Stopping Distance from 60.0 mph

148.0

BRAKE TESTING

TEST LOCATION: Chrysler Proving Grounds

DATE: September 15, 2007

BEGINNING Time: 12:20 p.m.

TEMPERATURE: 54.4°F

MAKE & MODEL: Chevrolet Impala 9C1 3.9L

BRAKE SYSTEM: Anti-lock

Phase I

BRAKE HEAT-UP: (Two 90 → 0 mph decelerations @ 22 ft./sec.²)

TEST: (Six 60 → mph impending skid (ABS) maximum deceleration rate stops)

	Initial Velocity	Stopping Distance	Deceleration Rate
Stop #1	60.0 mph	142.2 feet	27.19 ft/s ²
Stop #2	60.1 mph	141.2 feet	27.51 ft/s ²
Stop #3	59.6 mph	141.4 feet	27.05 ft/s ²
Stop #4	60.1 mph	144.2 feet	26.94 ft/s ²
Stop #5	59.9 mph	142.9 feet	27.02 ft/s ²
Stop #6	60.7 mph	147.7 feet	26.81 ft/s ²

AVERAGE DECELERATION RATE

27.09 ft/s²

HEAT SOAK (4 minutes)

Phase II

BRAKE HEAT-UP: (Two 90 → 0 mph decelerations @ 22 ft./sec.²)

TEST: (Six 60 → mph impending skid (ABS) maximum deceleration rate stops)

	Initial Velocity	Stopping Distance	Deceleration Rate
Stop #1	60.8 mph	147.4 feet	26.93 ft/s ²
Stop #2	60.9 mph	150.0 feet	26.59 ft/s ²
Stop #3	60.8 mph	143.8 feet	27.68 ft/s ²
Stop #4	60.3 mph	143.3 feet	27.33 ft/s ²
Stop #5	60.2 mph	142.0 feet	27.41 ft/s ²
Stop #6	60.1 mph	149.7 feet	25.95 ft/s ²

AVERAGE DECELERATION RATE

26.98 ft/s²

Phase III

	Yes/No
Evidence of severe fading?	<u>No</u>
Vehicle stopped in straight line?	<u>Yes</u>
Vehicle stopped within correct lane?	<u>Yes</u>

OVERALL AVERAGE DECEL. RATE:

27.03 ft/s²

Projected Stopping Distance from 60.0 mph 143.2

BRAKE TESTING

TEST LOCATION: Chrysler Proving Grounds

DATE: September 15, 2007

BEGINNING Time: 1:05 p.m.

TEMPERATURE: 55.9°F

MAKE & MODEL: Dodge Charger 3.5L

BRAKE SYSTEM: Anti-lock

Phase I

BRAKE HEAT-UP: (Two 90 → 0 mph decelerations @ 22 ft.sec.²)

TEST: (Six 60 → mph impending skid (ABS) maximum deceleration rate stops)

	Initial Velocity	Stopping Distance	Deceleration Rate
Stop #1	60.5 mph	144.8 feet	27.15 ft/s ²
Stop #2	62.1 mph	149.6 feet	27.71 ft/s ²
Stop #3	60.0 mph	141.3 feet	27.37 ft/s ²
Stop #4	60.4 mph	143.2 feet	27.44 ft/s ²
Stop #5	60.7 mph	148.1 feet	26.78 ft/s ²
Stop #6	59.8 mph	137.3 feet	28.03 ft/s ²

AVERAGE DECELERATION RATE

27.41ft/s²

HEAT SOAK (4 minutes)

Phase II

BRAKE HEAT-UP: (Two 90 → 0 mph decelerations @ 22 ft.sec.²)

TEST: (Six 60 → mph impending skid (ABS) maximum deceleration rate stops)

	Initial Velocity	Stopping Distance	Deceleration Rate
Stop #1	60.0 mph	141.1 feet	27.45 ft/s ²
Stop #2	60.3 mph	141.6 feet	27.61 ft/s ²
Stop #3	61.1 mph	152.5 feet	26.30 ft/s ²
Stop #4	60.7 mph	144.3 feet	27.48 ft/s ²
Stop #5	59.6 mph	142.0 feet	26.91 ft/s ²
Stop #6	60.7 mph	148.2 feet	26.76 ft/s ²

AVERAGE DECELERATION RATE

27.08 ft/s²

Phase III

	Yes/No
Evidence of severe fading?	<u>No</u>
Vehicle stopped in straight line?	<u>Yes</u>
Vehicle stopped within correct lane?	<u>Yes</u>

OVERALL AVERAGE DECEL. RATE:

27.25 ft/s²

Projected Stopping Distance from 60.0 mph

142.1

BRAKE TESTING

TEST LOCATION: Chrysler Proving Grounds

DATE: September 15, 2007

BEGINNING Time: 1:30 p.m.

TEMPERATURE: 55.8°F

MAKE & MODEL: Dodge Charger 5.7L

BRAKE SYSTEM: Anti-lock

Phase I

BRAKE HEAT-UP: (Two 90 → 0 mph decelerations @ 22 ft./sec.²)

TEST: (Six 60 → mph impending skid (ABS) maximum deceleration rate stops)

	Initial Velocity	Stopping Distance	Deceleration Rate
Stop #1	60.6 mph	146.9 feet	26.93 ft/s ²
Stop #2	60.7 mph	147.2 feet	26.90 ft/s ²
Stop #3	60.4 mph	144.1 feet	27.21 ft/s ²
Stop #4	60.2 mph	139.1 feet	28.05 ft/s ²
Stop #5	60.4 mph	145.8 feet	26.87 ft/s ²
Stop #6	60.2 mph	145.5 feet	26.77 ft/s ²

AVERAGE DECELERATION RATE

27.12 ft/s²

HEAT SOAK (4 minutes)

Phase II

BRAKE HEAT-UP: (Two 90 → 0 mph decelerations @ 22 ft./sec.²)

TEST: (Six 60 → mph impending skid (ABS) maximum deceleration rate stops)

	Initial Velocity	Stopping Distance	Deceleration Rate
Stop #1	60.2 mph	153.9 feet	25.36 ft/s ²
Stop #2	60.6 mph	143.6 feet	27.55 ft/s ²
Stop #3	60.4 mph	143.4 feet	27.34 ft/s ²
Stop #4	60.1 mph	146.6 feet	26.51 ft/s ²
Stop #5	60.0 mph	144.2 feet	26.86 ft/s ²
Stop #6	60.6 mph	146.6 feet	26.97 ft/s ²

AVERAGE DECELERATION RATE

26.76 ft/s²

Phase III

	Yes/No
Evidence of severe fading?	<u>No</u>
Vehicle stopped in straight line?	<u>Yes</u>
Vehicle stopped within correct lane?	<u>Yes</u>

OVERALL AVERAGE DECEL. RATE:

26.94 ft/s²

Projected Stopping Distance from 60.0 mph 143.7

BRAKE TESTING

TEST LOCATION: Chrysler Proving Grounds

DATE: September 15, 2007

BEGINNING Time: 8:19 a.m.

TEMPERATURE: 42.2°F

MAKE & MODEL: Dodge Magnum 3.5L

BRAKE SYSTEM: Anti-lock

Phase I

BRAKE HEAT-UP: (Two 90 → 0 mph decelerations @ 22 ft.sec.²)

TEST: (Six 60 → mph impending skid (ABS) maximum deceleration rate stops)

	Initial Velocity	Stopping Distance	Deceleration Rate
Stop #1	61.4 mph	141.5 feet	28.66 ft/s ²
Stop #2	59.9 mph	138.8 feet	27.85 ft/s ²
Stop #3	61.7 mph	144.3 feet	28.39 ft/s ²
Stop #4	60.8 mph	136.7 feet	29.08 ft/s ²
Stop #5	61.0 mph	138.2 feet	28.97 ft/s ²
Stop #6	60.3 mph	135.7 feet	28.82 ft/s ²

AVERAGE DECELERATION RATE

28.63 ft/s²

HEAT SOAK (4 minutes)

Phase II

BRAKE HEAT-UP: (Two 90 → 0 mph decelerations @ 22 ft.sec.²)

TEST: (Six 60 → mph impending skid (ABS) maximum deceleration rate stops)

	Initial Velocity	Stopping Distance	Deceleration Rate
Stop #1	60.3 mph	135.9 feet	28.78 ft/s ²
Stop #2	60.0 mph	138.1 feet	28.04 ft/s ²
Stop #3	61.1 mph	145.7 feet	27.56 ft/s ²
Stop #4	60.4 mph	138.3 feet	28.37 ft/s ²
Stop #5	60.7 mph	140.0 feet	28.29 ft/s ²
Stop #6	60.4 mph	135.7 feet	28.92 ft/s ²

AVERAGE DECELERATION RATE

28.33 ft/s²

Phase III

	Yes/No
Evidence of severe fading?	<u>No</u>
Vehicle stopped in straight line?	<u>Yes</u>
Vehicle stopped within correct lane?	<u>Yes</u>

OVERALL AVERAGE DECEL. RATE:

28.48 ft/s²

Projected Stopping Distance from 60.0 mph 136.0

BRAKE TESTING

TEST LOCATION: Chrysler Proving Grounds

DATE: September 15, 2007

BEGINNING Time: 10:16a.m.

TEMPERATURE: 49.2°F

MAKE & MODEL: Dodge Magnum 5.7L

BRAKE SYSTEM: Anti-lock

Phase I

BRAKE HEAT-UP: (Two 90 → 0 mph decelerations @ 22 ft./sec.²)

TEST: (Six 60 → mph impending skid (ABS) maximum deceleration rate stops)

	Initial Velocity	Stopping Distance	Deceleration Rate
Stop #1	60.4 mph	139.5 feet	28.16 ft/s ²
Stop #2	59.9 mph	142.0 feet	27.15 ft/s ²
Stop #3	61.4 mph	146.2 feet	27.76 ft/s ²
Stop #4	60.7 mph	144.0 feet	27.56 ft/s ²
Stop #5	60.6 mph	142.6 feet	27.67 ft/s ²
Stop #6	60.3 mph	145.2 feet	26.92 ft/s ²

AVERAGE DECELERATION RATE

27.54 ft/s²

HEAT SOAK (4 minutes)

Phase II

BRAKE HEAT-UP: (Two 90 → 0 mph decelerations @ 22 ft./sec.²)

TEST: (Six 60 → mph impending skid (ABS) maximum deceleration rate stops)

	Initial Velocity	Stopping Distance	Deceleration Rate
Stop #1	60.4 mph	143.5 feet	27.34 ft/s ²
Stop #2	59.9 mph	137.3 feet	28.10 ft/s ²
Stop #3	60.7 mph	145.9 feet	27.18 ft/s ²
Stop #4	60.7 mph	147.4 feet	26.90 ft/s ²
Stop #5	60.4 mph	142.5 feet	27.56 ft/s ²
Stop #6	60.4 mph	145.7 feet	26.95 ft/s ²

AVERAGE DECELERATION RATE

27.34 ft/s²

Phase III

	Yes/No
Evidence of severe fading?	<u>No</u>
Vehicle stopped in straight line?	<u>Yes</u>
Vehicle stopped within correct lane?	<u>Yes</u>

OVERALL AVERAGE DECEL. RATE:

27.44 ft/s²

Projected Stopping Distance from 60.0 mph 141.1

BRAKE TESTING

TEST LOCATION: Chrysler Proving Grounds

DATE: September 15, 2007

BEGINNING Time: 10:00 a.m.

TEMPERATURE: 48.8F

MAKE & MODEL: Chevrolet Tahoe 5.3L 2WD

BRAKE SYSTEM: Anti-lock

Phase I

BRAKE HEAT-UP: (Two 90 →0 mph decelerations @ 22 ft.sec.²)

TEST: (Six 60 → mph impending skid (ABS) maximum deceleration rate stops)

	Initial Velocity	Stopping Distance	Deceleration Rate
Stop #1	60.0 mph	144.0 feet	26.92 ft/s ²
Stop #2	60.6 mph	151.7 feet	26.05 ft/s ²
Stop #3	59.9 mph	142.6 feet	27.10 ft/s ²
Stop #4	60.1 mph	141.8 feet	27.44 ft/s ²
Stop #5	60.2 mph	141.7 feet	27.55 ft/s ²
Stop #6	60.7 mph	146.4 feet	27.05 ft/s ²

AVERAGE DECELERATION RATE

27.02 ft/s²

HEAT SOAK (4 minutes)

Phase II

BRAKE HEAT-UP: (Two 90 →0 mph decelerations @ 22 ft.sec.²)

TEST: (Six 60 → mph impending skid (ABS) maximum deceleration rate stops)

	Initial Velocity	Stopping Distance	Deceleration Rate
Stop #1	60.1 mph	143.1 feet	27.16 ft/s ²
Stop #2	60.2 mph	147.3 feet	26.45 ft/s ²
Stop #3	60.1 mph	145.2 feet	26.80 ft/s ²
Stop #4	60.7 mph	147.1 feet	26.89 ft/s ²
Stop #5	60.5 mph	147.5 feet	26.69 ft/s ²
Stop #6	61.0 mph	152.4 feet	26.22 ft/s ²

AVERAGE DECELERATION RATE

26.70 ft/s²

Phase III

Evidence of severe fading?

Yes/No

No

Vehicle stopped in straight line?

Yes

Vehicle stopped within correct lane?

Yes

OVERALL AVERAGE DECEL. RATE:

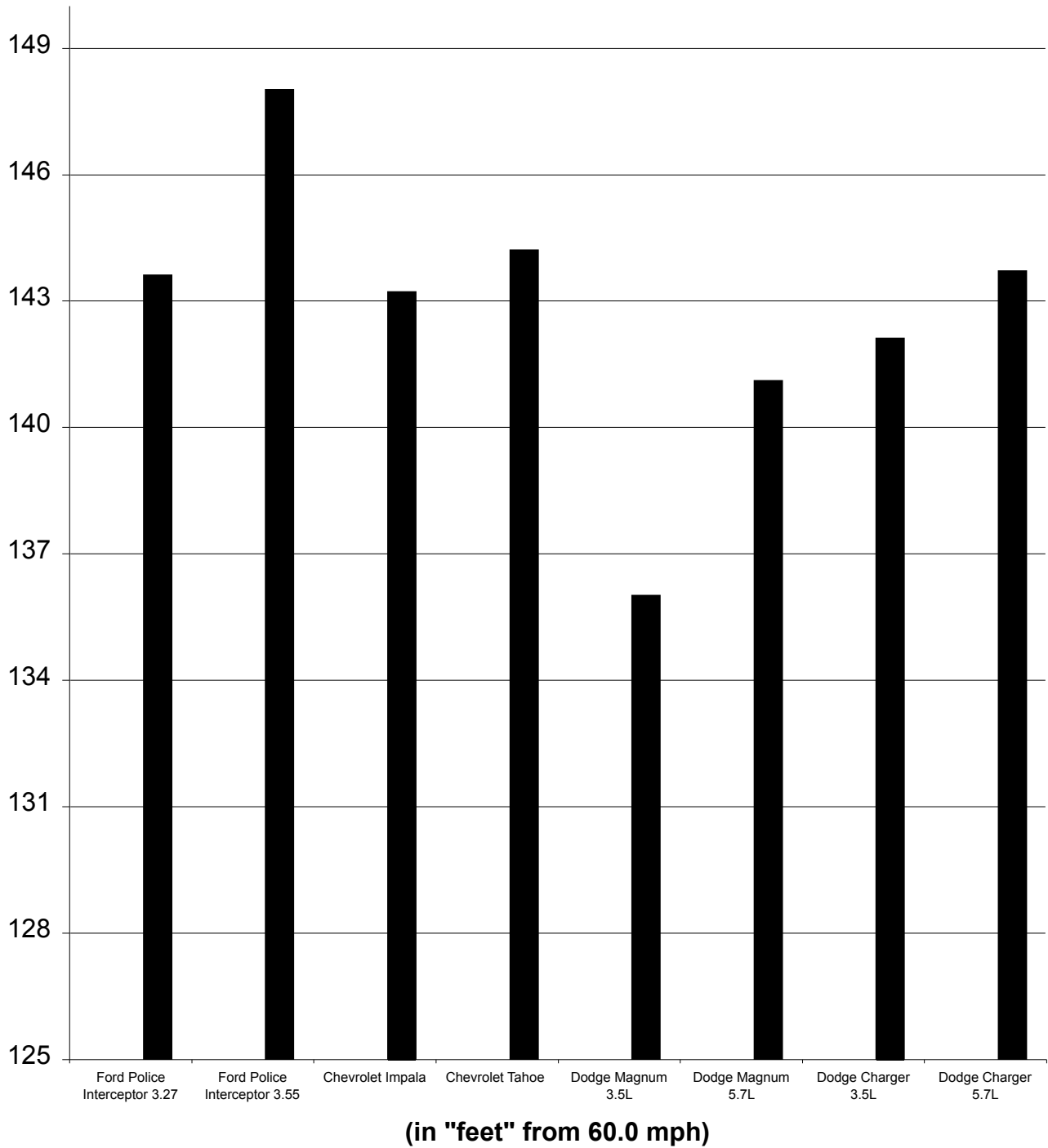
26.86 ft/s²

Projected Stopping Distance from 60.0 mph

144.2

2008 Brake Testing Comparison

STOPPING DISTANCE



ERGONOMICS AND COMMUNICATIONS

TEST OBJECTIVE

Rate each test vehicle's ability to:

1. Provide a suitable environment for the patrol officer in the performance of his/her assigned tasks.
2. Accommodate the required communications and emergency warning equipment and assess the relative difficulty of such installations.

TEST METHODOLOGY

Utilizing the ergonomics portion of the form, a minimum of four officers (in this case 10) individually and independently compare and score each test vehicle on the various comfort, instrumentation, and visibility items. The installation and communications portion of the evaluation is conducted by personnel from the Canfield Equipment Service, Inc., based upon the relative difficulty of the necessary installations. Each factor is graded on a 1 to 10 scale, with 1 representing "totally unacceptable," 5 representing "average," and 10 representing "superior." The scores are averaged to minimize personal prejudice for or against any given vehicle.

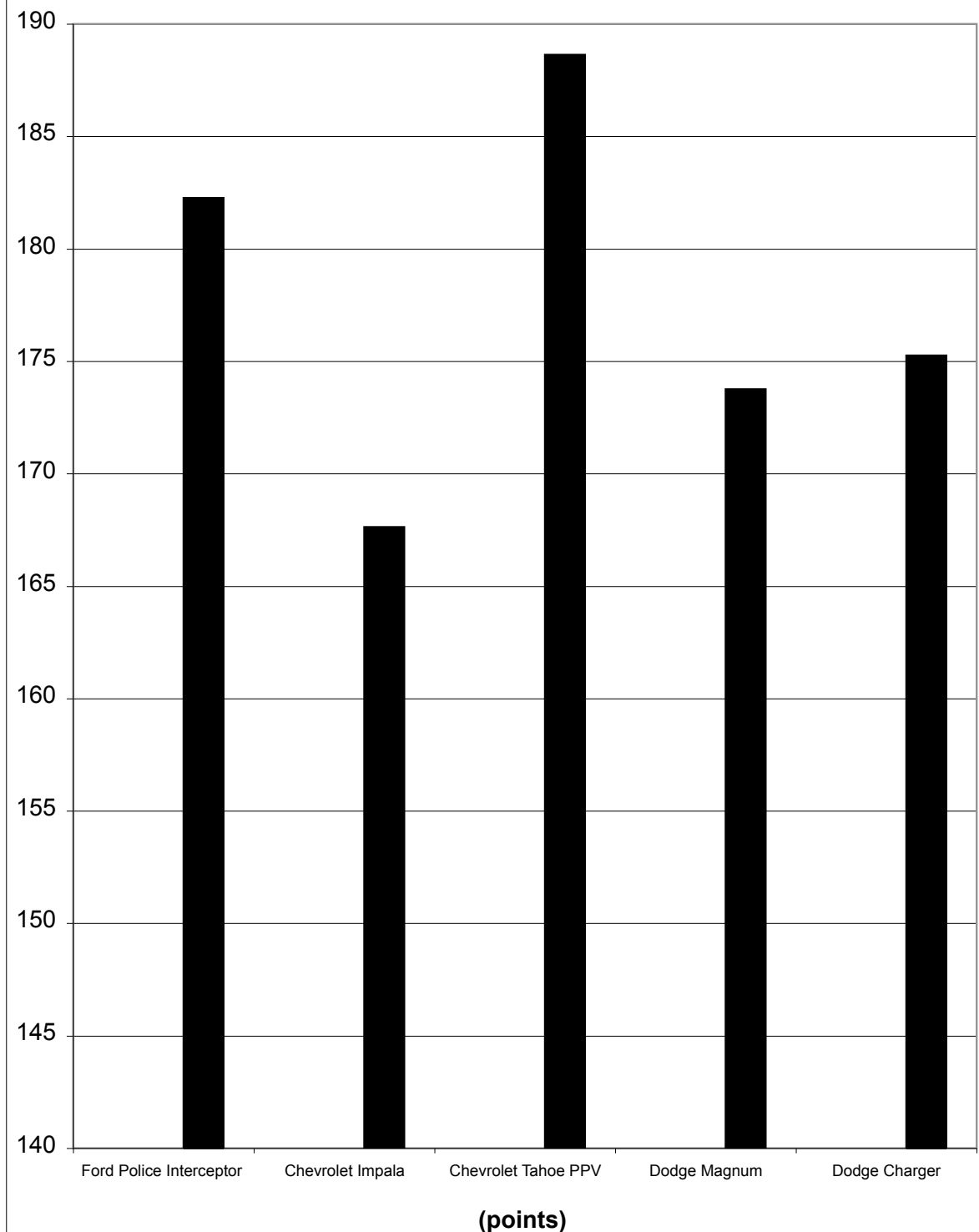


ERGONOMICS AND COMMUNICATIONS

ERGONOMICS	Ford Police Interceptor	Dodge Charger	Chevrolet Tahoe PPV	Chevrolet Impala 9C1	Dodge Magnum
FRONT SEAT					
Padding	5.60	5.40	6.90	5.70	5.40
Depth of Bucket Seat	5.70	5.30	6.10	5.10	5.30
Adjustability – Front to Rear	7.40	7.50	6.60	6.00	7.30
Upholstery	5.70	6.10	6.40	6.00	6.10
Bucket Seat Design	5.40	5.60	6.40	5.50	5.60
Headroom	7.10	6.80	8.00	6.20	6.60
Seatbelts	6.00	6.40	7.00	6.40	6.50
Ease of Entry and Exit	6.60	6.90	7.60	5.60	7.00
Overall Comfort Rating	6.60	6.50	7.50	6.00	6.60
REAR SEAT					
Leg room – Front seat back	6.00	6.20	7.20	3.40	6.10
Ease of Entry and Exit	5.80	5.00	6.40	3.50	5.90
INSTRUMENTATION					
Clarity	5.90	6.00	7.00	6.80	6.00
Placement	5.90	5.50	6.40	7.10	5.50
VEHICLE CONTROLS					
Pedals, Size and Position	5.60	6.30	6.80	6.20	6.30
Power Window Switch	6.70	7.00	7.20	6.70	7.00
Inside Door Lock Switch	6.50	7.00	6.10	5.50	7.00
Automatic Door Lock Switch	6.50	4.90	6.20	5.30	4.90
Outside Mirror Controls	6.40	6.10	6.80	5.50	6.10
Steering Wheel, Size, Tilt Release, and Surface	7.00	5.70	7.50	6.70	5.70
Heat/AC Vent Placement and Adjustability	6.70	6.30	6.40	6.00	6.30
VISIBILITY					
Front (Windshield)	7.20	6.40	7.40	7.30	6.00
Rear (Back Window)	6.70	5.50	5.50	5.50	4.00
Left Rear Quarter	6.60	5.20	5.30	6.00	5.10
Right Rear Quarter	6.20	4.80	4.80	5.40	4.90
Outside Rear View Mirrors	5.60	5.60	7.40	4.50	5.80
COMMUNICATIONS					
Dashboard Accessibility	8.00	8.42	6.83	7.50	8.42
Trunk Accessibility	8.20	8.00	6.90	7.90	7.50
Engine Compartment	8.67	8.83	8.00	8.33	8.83
TOTAL SCORES	182.27	175.25	188.63	167.63	173.75

2008 ERGONOMICS/COMMUNICATIONS

VEHICLE SCORES



FUEL ECONOMY

TEST OBJECTIVE

Determine the fuel economy potential of all vehicles being evaluated. The data used for scoring are both valid and reliable in a comparison sense, while not necessarily being an accurate predictor of actual fuel economy in police patrol service.

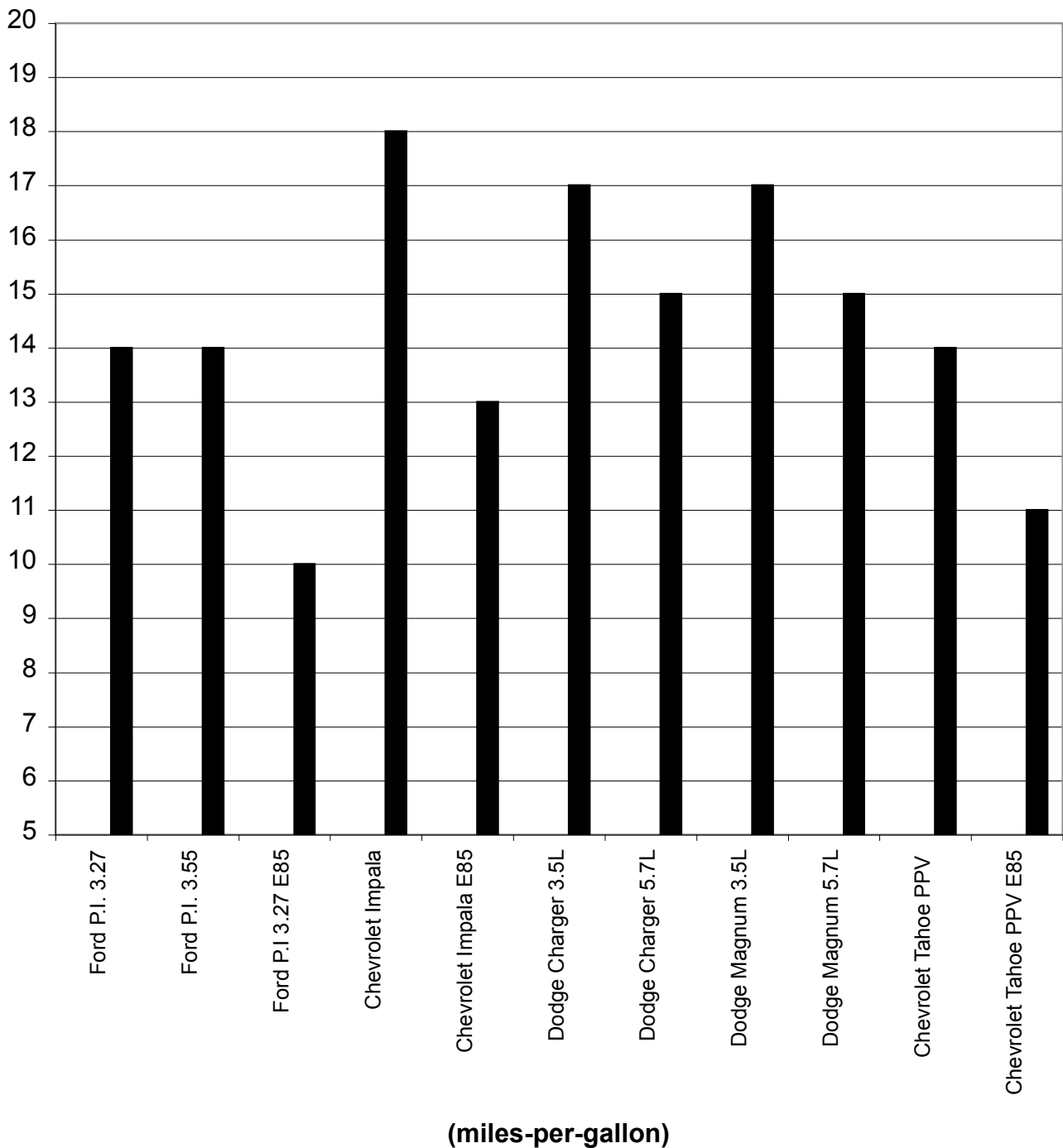
TEST METHODOLOGY

The vehicles will be scored based on estimates for city fuel economy to the nearest 1/10th mile per gallon (mpg) developed from data supplied by the vehicle manufacturer and certified by the Environmental Protection Agency.

Vehicles Make/Model/Engine	E.P.A. Miles Per Gallon		
	City	Highway	Combined
Ford Police Interceptor 3.27 4.6L SPFI	14	21	16
Ford Police Interceptor 3.55 4.6L SPFI	14	21	16
Ford E85 Police Interceptor 3.27 4.6L SPFI	10	16	12
Chevrolet Impala 3.9L SPFI	18	27	21
Chevrolet Impala E85 3.9L SPFI	13	20	16
Dodge Charger 3.5L SPFI	17	24	20
Dodge Charger 5.7L SPFI	15	23	18
Dodge Magnum 3.5L SPFI	17	24	20
Dodge Magnum 5.7L SPFI	15	23	18
Chevrolet Tahoe PPV 5.3L SPFI	14	19	16
Chevrolet Tahoe E85 PPV 5.3L SPFI	11	14	12

2008 FUEL ECONOMY COMPARISON

"CITY" EPA ESTIMATES



MICHIGAN STATE POLICE SCORING AND BID ADJUSTMENT METHODOLOGY*

STEP I: RAW SCORES

Raw scores are developed, through testing, for each vehicle in each of six evaluation categories. The raw scores are expressed in terms of seconds, feet per second², miles-per-hour, points, and miles-per-gallon.

VEHICLE DYNAM. (seconds)	BRAKING RATE (ft/sec ²)	ACCEL. (seconds)	TOP SPEED (mph)	ERGONOMICS & COMMUN. (points)	FUEL ECONOMY (mpg)
92.210	26.380	45.790	115.000	173.900	14.300

STEP II: DEVIATION FACTOR

In each evaluation category, the best scoring vehicle's score is used as the benchmark against which each of the other vehicles' scores are compared. (In the Vehicle Dynamics and Acceleration categories the lowest score is best, while in the remainder of the categories the highest score is best.) The best scoring vehicle in a given category received a deviation factor of "0." The "deviation factor" is then calculated by determining the absolute difference between each vehicle's raw score and the best score in that category. The absolute difference is then divided by the best score, with the result being the "deviation factor."

CAR MAKE MODEL	TOP SPEED
CAR "A"	115.000 .042
CAR "B"	118.800 .010
CAR "C"	117.900 .018
CAR "D"	120.000 0

EXAMPLE:

Best Score (Car "D")	Other Vehicle Score (Car "A")	Absolute Difference	Best Score	Deviation Factor (Car "A")
120.000	115.000	5	120.000	.042

STEP III: WEIGHTED CATEGORY SCORE

Each vehicle's weighted category score is determined by multiplying the deviation factor (as determined in Step II) by the category weight.

RAW SCORE
DEVIATION FACTOR
WEIGHTED CATEGORY SCORE

10 points	(category weight)
TOP SPEED (mph)	
115.000	
.042	.042 X 10 = .420
.420	

*All mathematical computations are to be rounded to the third decimal place.

STEP IV: TOTAL WEIGHTED SCORE

Adding together the six (6) weighted category scores for that vehicle derives the total weighted score for each vehicle.

EXAMPLE:

CAR	30 pts. VEH. DYN. (seconds)	25 pts. BRAKE DECEL. (ft/sec ²)	20 pts. ACCEL. (seconds)	10 pts. TOP SPEED (mph)	10 pts. ERGO/ COMM. (points)	5 pts. FUEL ECON. (mpg)	TOTAL WEIGHTED SCORE
Car "A"	92.210 .018 .540	45.790 .163 4.075	26.380 0 0	115.000 .042 .420	173.900 .184 1.840	14.300 0 0	6.875

STEP V: BID ADJUSTMENT FIGURE

The bid adjustment figure that we have chosen to use is one percent (1%) of the lowest bid price received. As an example, in this and the following two steps, the lowest bid price received was \$15,238.00, which results in a bid adjustment figure of **\$152.38**.

STEP VI: ACTUAL DOLLAR ADJUSTMENT

The actual dollar adjustment for a vehicle is determined by multiplying that vehicle's total weighted score by the bid adjustment figure as shown at right.

TOTAL WTD. SCORE	BID ADJ. FIGURE	ACTUAL DOLLAR ADJ.
X		=
6.875	\$152.38	\$1,047.61

STEP VII: ADJUSTED BID PRICE

The actual dollar adjustment amount arrived at for each vehicle is added to that vehicle's bid price. Provided other necessary approvals are received, the vehicle with the lowest adjusted bid price will be the vehicle purchased. (The amount paid for the purchased vehicles will be the actual bid price.)

ACTUAL DOLLAR ADJ.	ACTUAL BID PRICE	ADJ. BID PRICE
+		=
\$955.42	\$15,473.00	\$16,520.61

PERFORMANCE COMPARISONS OF 2007 AND 2008 TEST VEHICLES

The following charts illustrate the scores achieved by each make and model of vehicle tested for model years 2007 and 2008. The charts presented are for the following performance categories:

- Vehicle Dynamics
 - Acceleration 0 – 60 mph
 - Acceleration 0 – 80 mph
 - Acceleration 0 – 100 mph
 - Top Speed
 - Braking (Calculated 60 – 0 mph Stopping Distance)

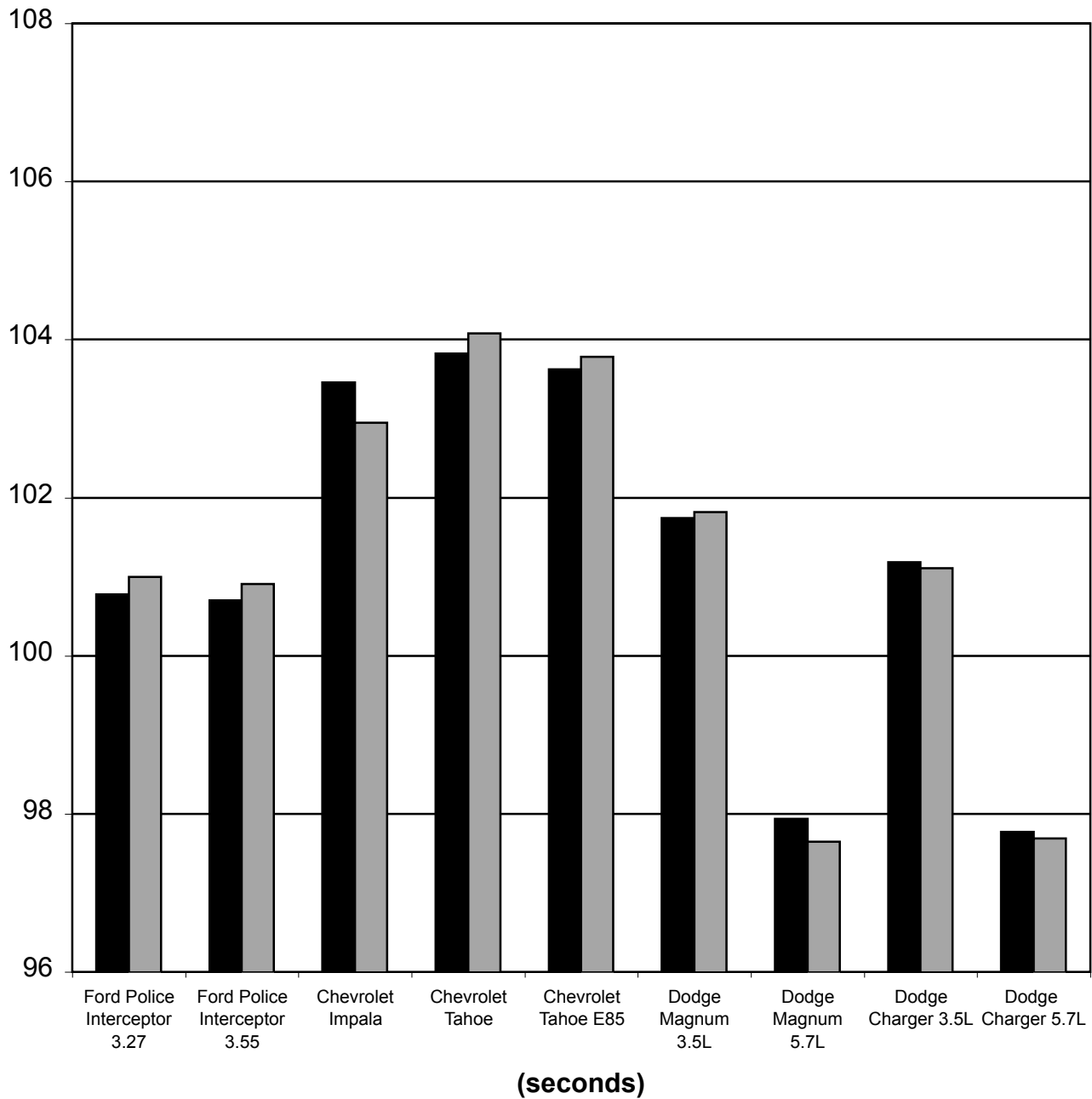
The reader should bear in mind the following information regarding variables when reviewing the 2007 – 2008 performance comparison charts. While as many variables as possible are eliminated from a given year's testing, those that occur over the span of a full year are sometimes impossible to eliminate.

The acceleration, top speed, and brake testing of both the 2007 and 2008 model year vehicles were conducted in the latter half of September. Temperatures on the test day in September of 2006 ranged between 56.0° F at the start of testing to a high of approximately 72.4° F during the afternoon. Temperatures during the testing this year varied, ranging between 39.8° F when testing started, to an afternoon high of 57.5° F. Such things as temperature, humidity, and barometric pressure affect the performance of internal combustion engines and brake components, and may cause minor differences from one year's evaluation to the next.

Another factor to be considered is the individual differences between two cars of the same make and model. The test cars that we evaluate are representative of their given make and model. Other cars of the same make and model will not, however, be exactly the same, particularly when it comes to performance. (It is well known that two consecutive cars off the same assembly line will perform slightly differently from each other.) Minor differences in performance from year to year within the same make and model are not only possible, but are to be expected.

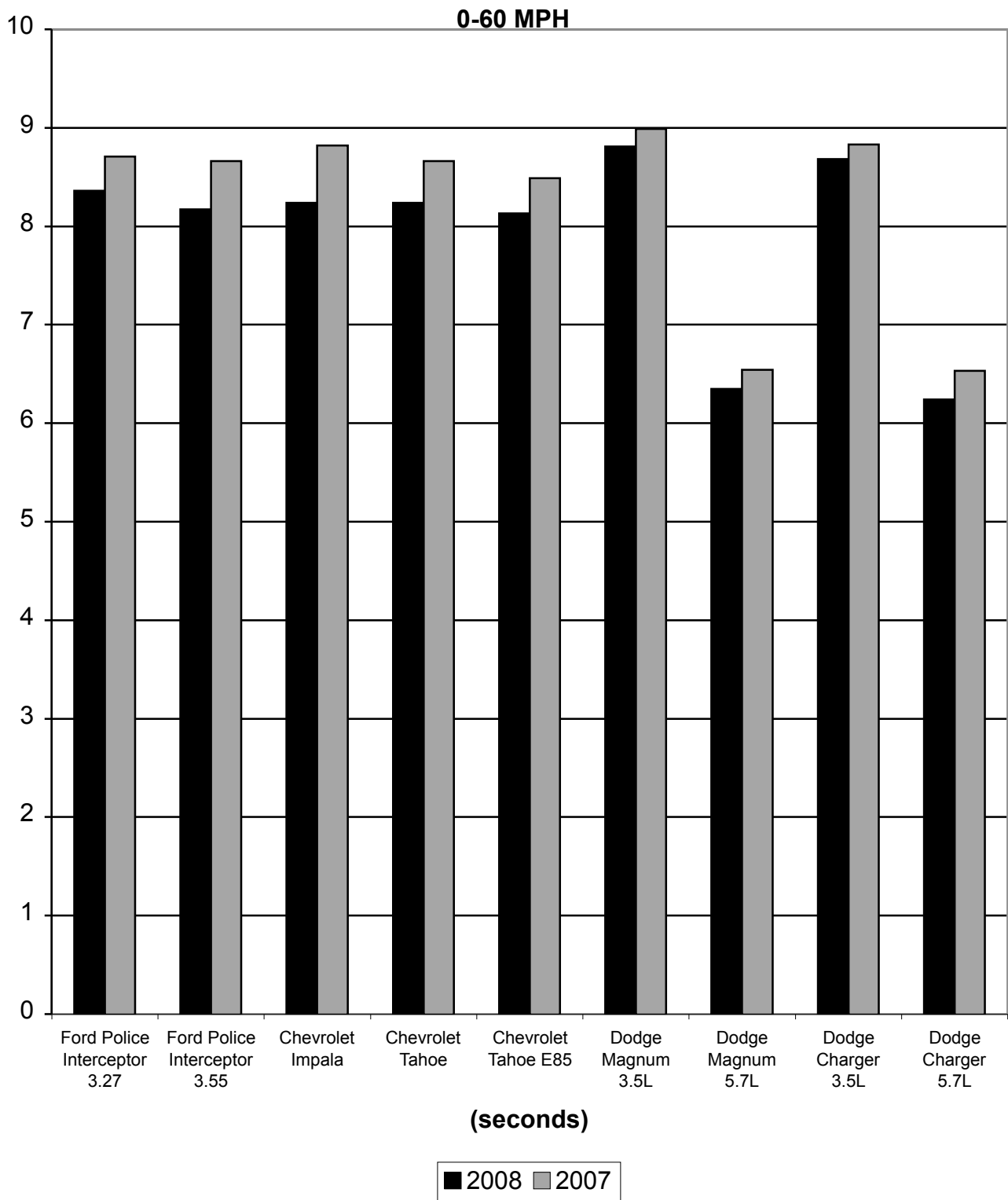
2007-08 Vehicle Dynamics Comparison

LAP TIMES



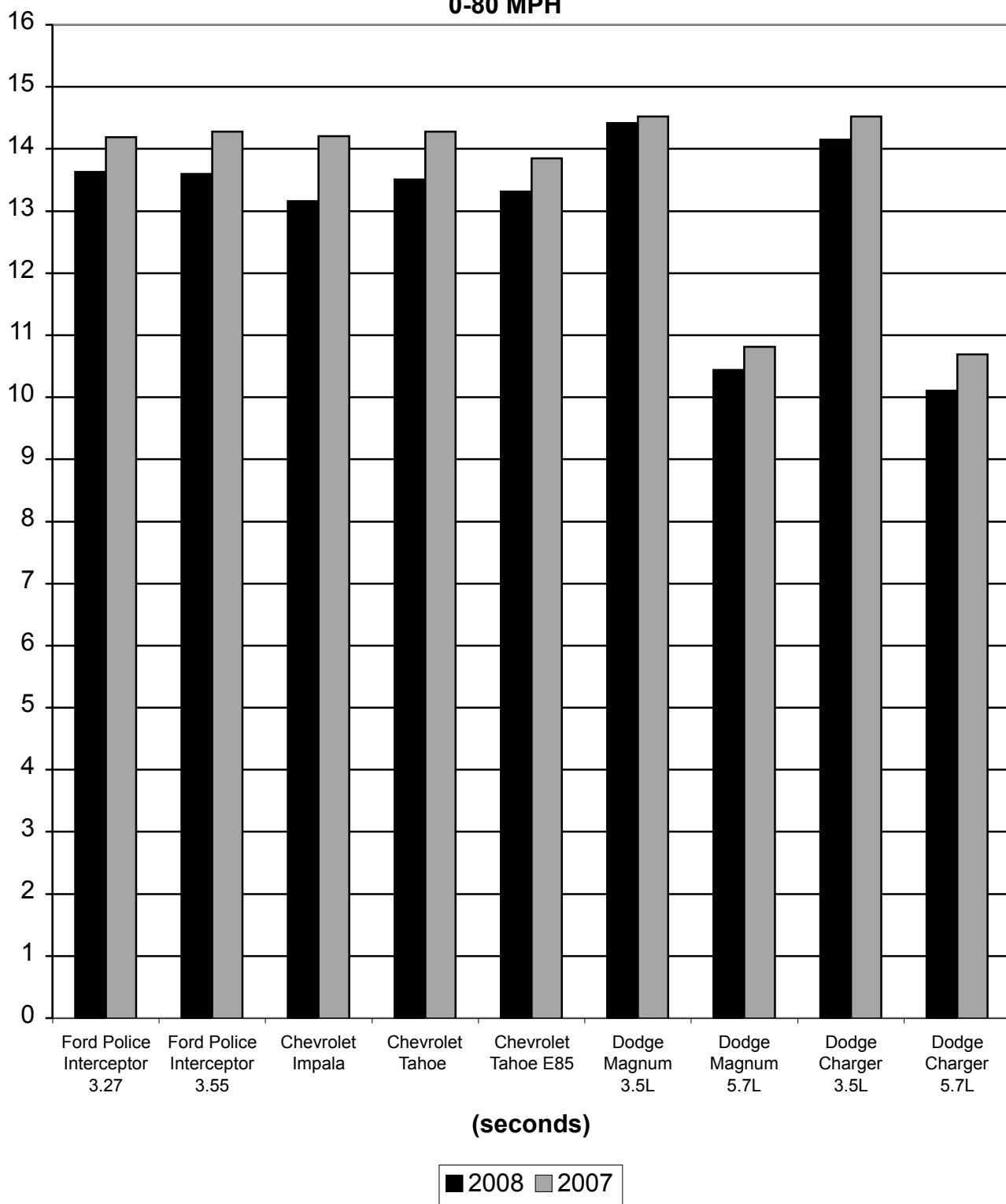
■ 2008 ■ 2007

2007-08 ACCELERATION COMPARISON



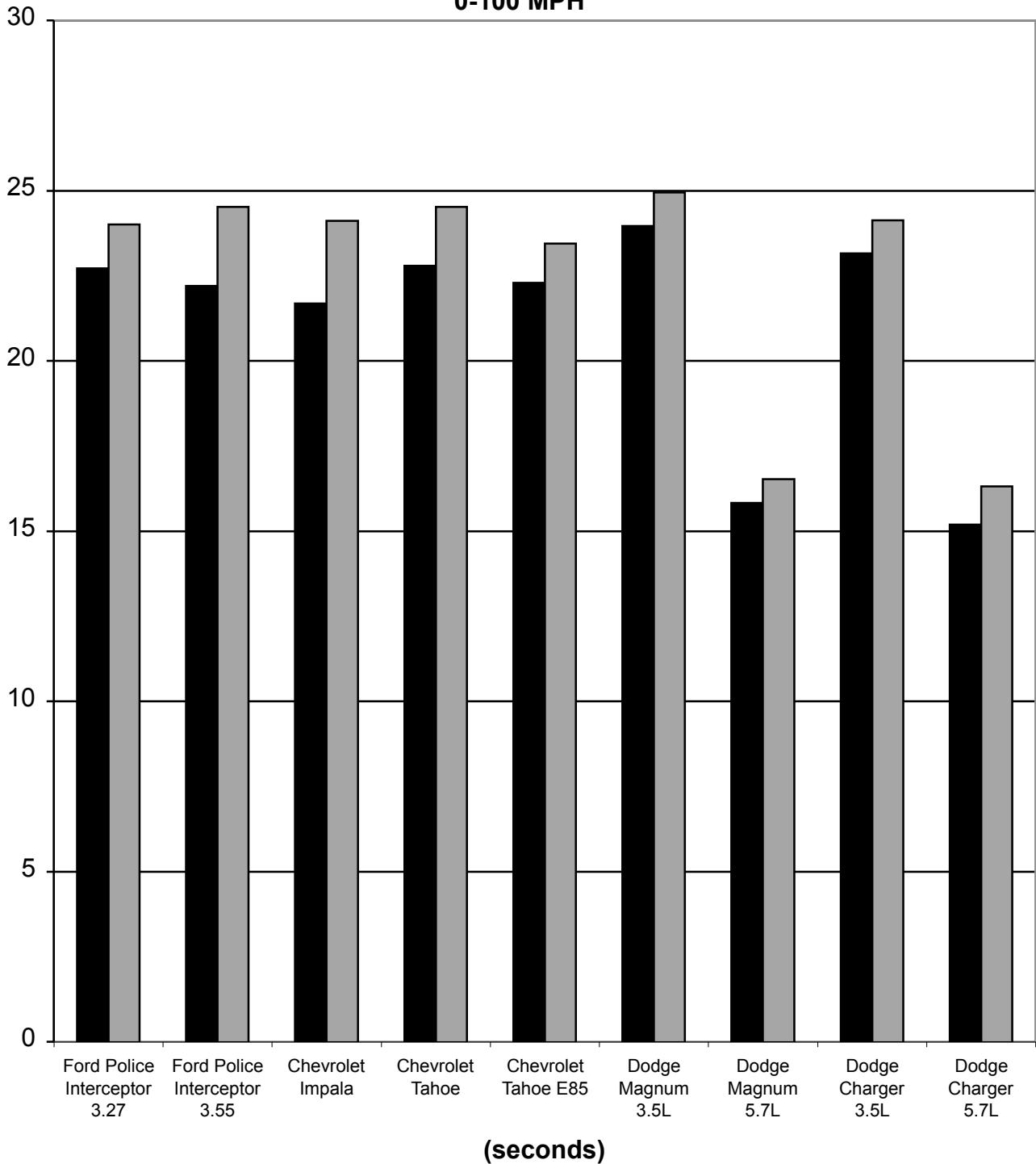
2007-08 ACCELERATION COMPARISON

0-80 MPH



2007-08 ACCELERATION COMPARISON

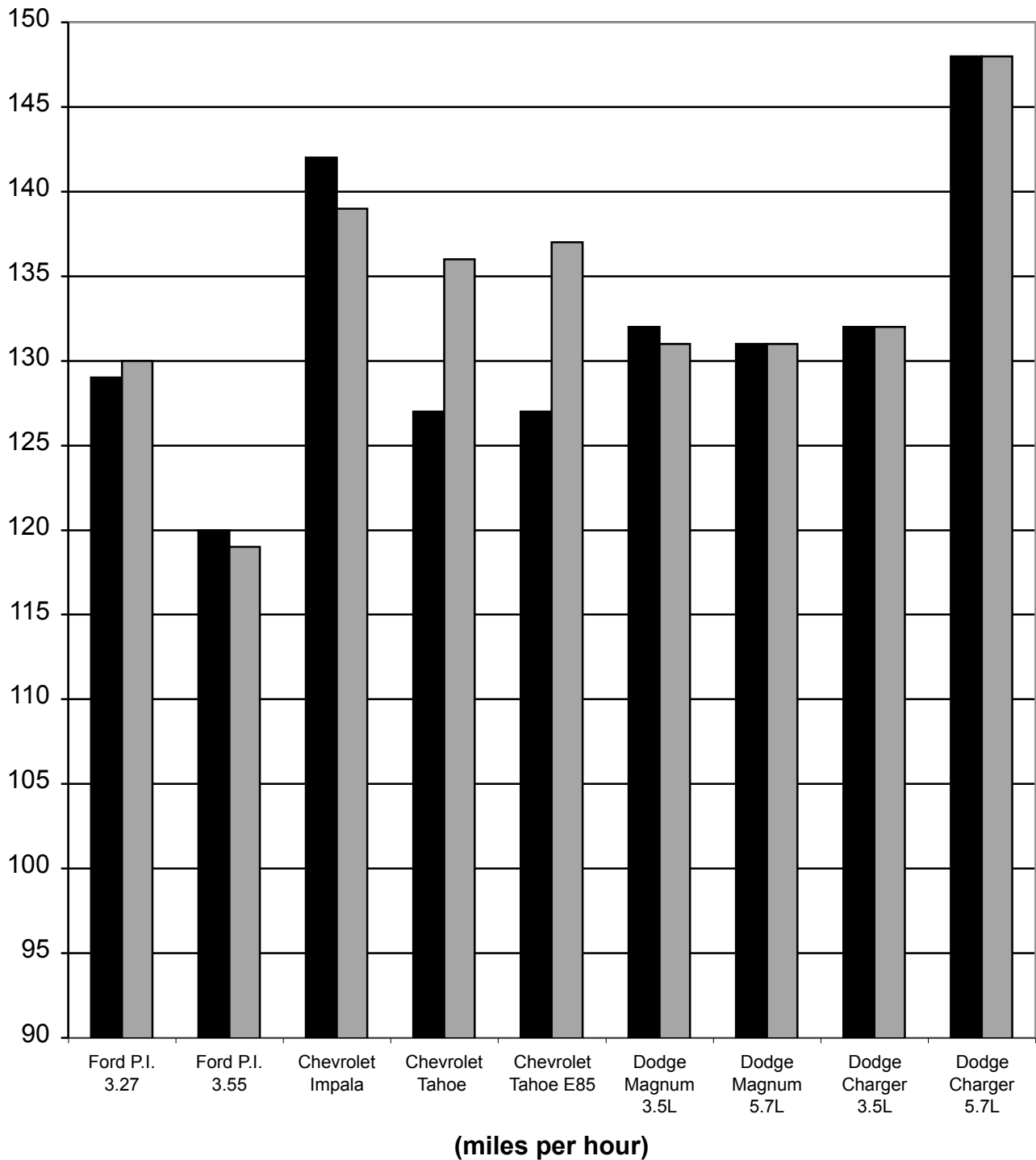
0-100 MPH



■ 2008 ■ 2007

2007- 08 TOP SPEED COMPARISON

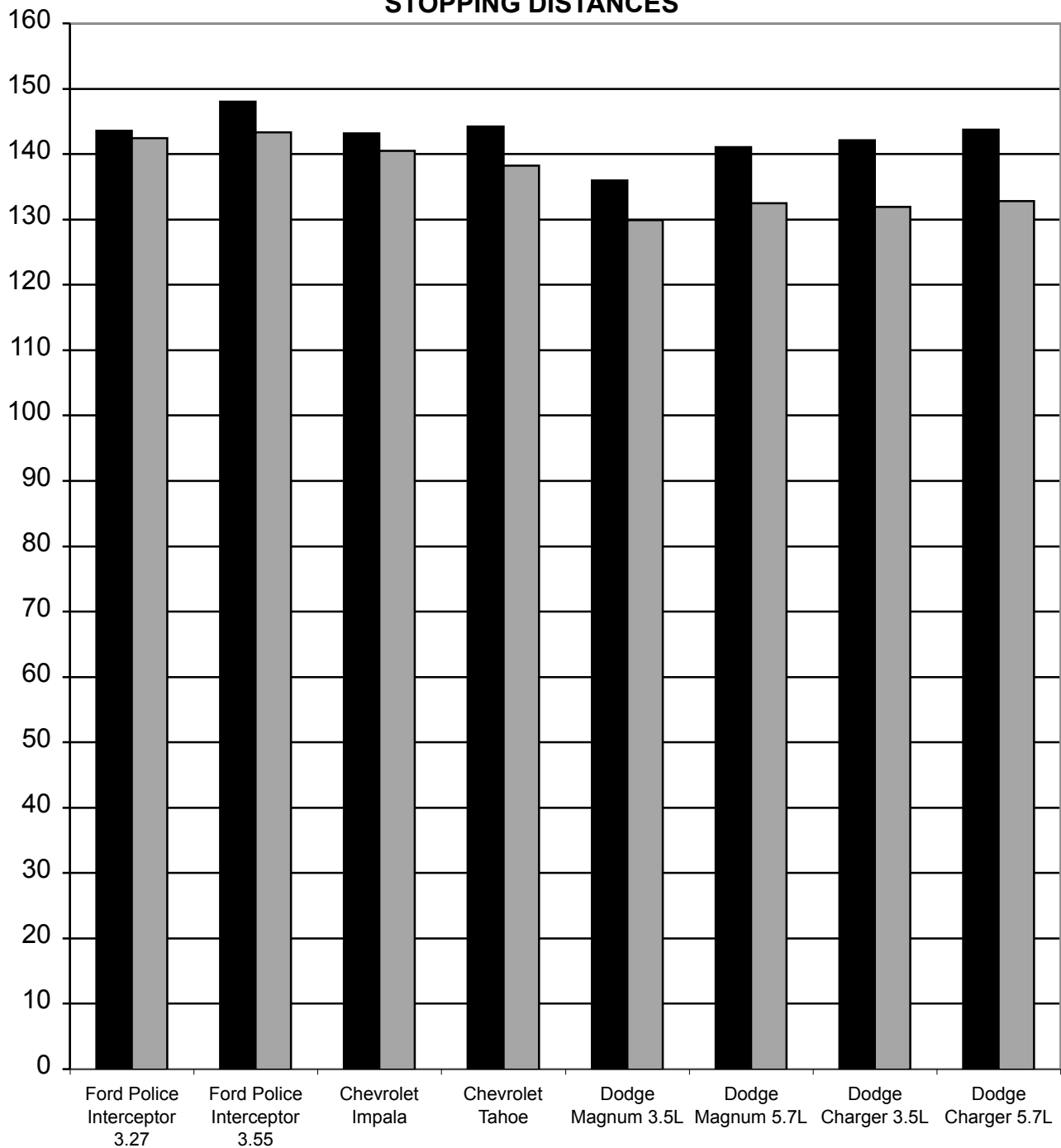
TOP SPEED ATTAINED



■ 2008 ■ 2007

2007-08 BRAKE TESTING COMPARISON

STOPPING DISTANCES



(in "feet" from 60 mph)

■ 2008 ■ 2007

MICHIGAN STATE POLICE SCORING AND BID ADJUSTMENT METHODOLOGY*

STEP I: RAW SCORES

Raw scores are developed, through testing, for each vehicle in each of six evaluation categories. The raw scores are expressed in terms of seconds, feet per second², miles-per-hour, points, and miles-per-gallon.

VEHICLE DYNAM. (seconds)	BRAKING RATE (ft/sec ²)	ACCEL. (seconds)	TOP SPEED (mph)	ERGONOMICS & COMMUN. (points)	FUEL ECONOMY (mpg)
92.210	26.380	45.790	115.000	173.900	14.300

STEP II: DEVIATION FACTOR

In each evaluation category, the best scoring vehicle's score is used as the benchmark against which each of the other vehicles' scores are compared. (In the Vehicle Dynamics and Acceleration categories the lowest score is best, while in the remainder of the categories the highest score is best.) The best scoring vehicle in a given category received a deviation factor of "0." The "deviation factor" is then calculated by determining the absolute difference between each vehicle's raw score and the best score in that category. The absolute difference is then divided by the best score, with the result being the "deviation factor."

CAR MAKE MODEL	TOP SPEED
CAR "A"	115.000 .042
CAR "B"	118.800 .010
CAR "C"	117.900 .018
CAR "D"	120.000 0

EXAMPLE:

Best Score (Car "D")	Other Vehicle Score (Car "A")	Absolute Difference	Best Score	Deviation Factor (Car "A")
120.000	115.000	5	120.000	.042

STEP III: WEIGHTED CATEGORY SCORE

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RAW SCORE
DEVIATION FACTOR
WEIGHTED CATEGORY SCORE

10 points	(category weight)
TOP SPEED (mph)	
115.000	
.042	.042 X 10 = .420
.420	

*All mathematical computations are to be rounded to the third decimal place.

STEP IV: TOTAL WEIGHTED SCORE

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EXAMPLE:

CAR	30 pts. VEH. DYN. (seconds)	25 pts. BRAKE DECEL. (ft/sec ²)	20 pts. ACCEL. (seconds)	10 pts. TOP SPEED (mph)	10 pts. ERGO/ COMM. (points)	5 pts. FUEL ECON. (mpg)	TOTAL WEIGHTED SCORE
Car "A"	92.210 .018 .540	45.790 .163 4.075	26.380 0 0	115.000 .042 .420	173.900 .184 1.840	14.300 0 0	6.875

STEP V: BID ADJUSTMENT FIGURE

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+		=
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 - Top Speed
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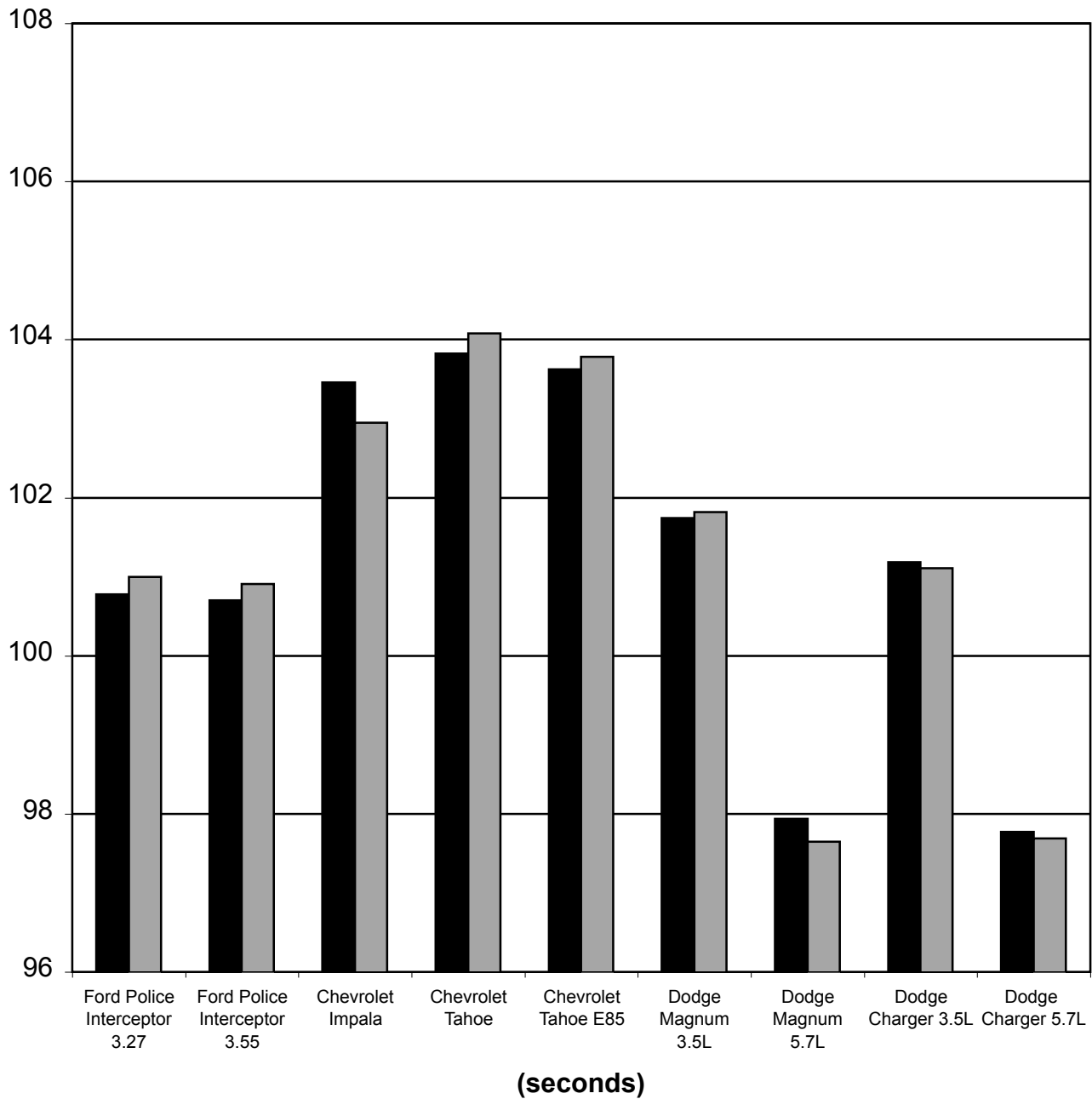
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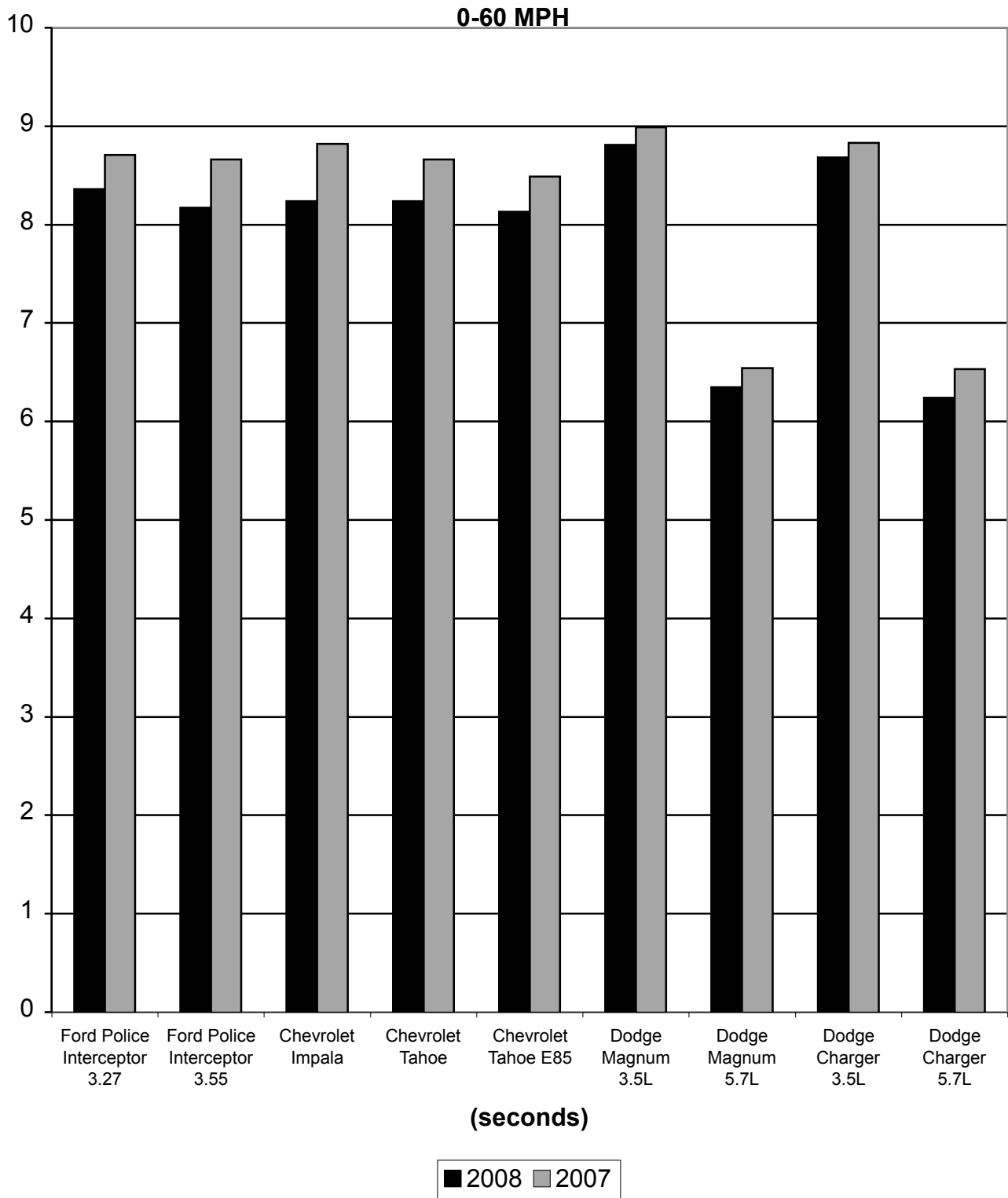
2007-08 Vehicle Dynamics Comparison

LAP TIMES



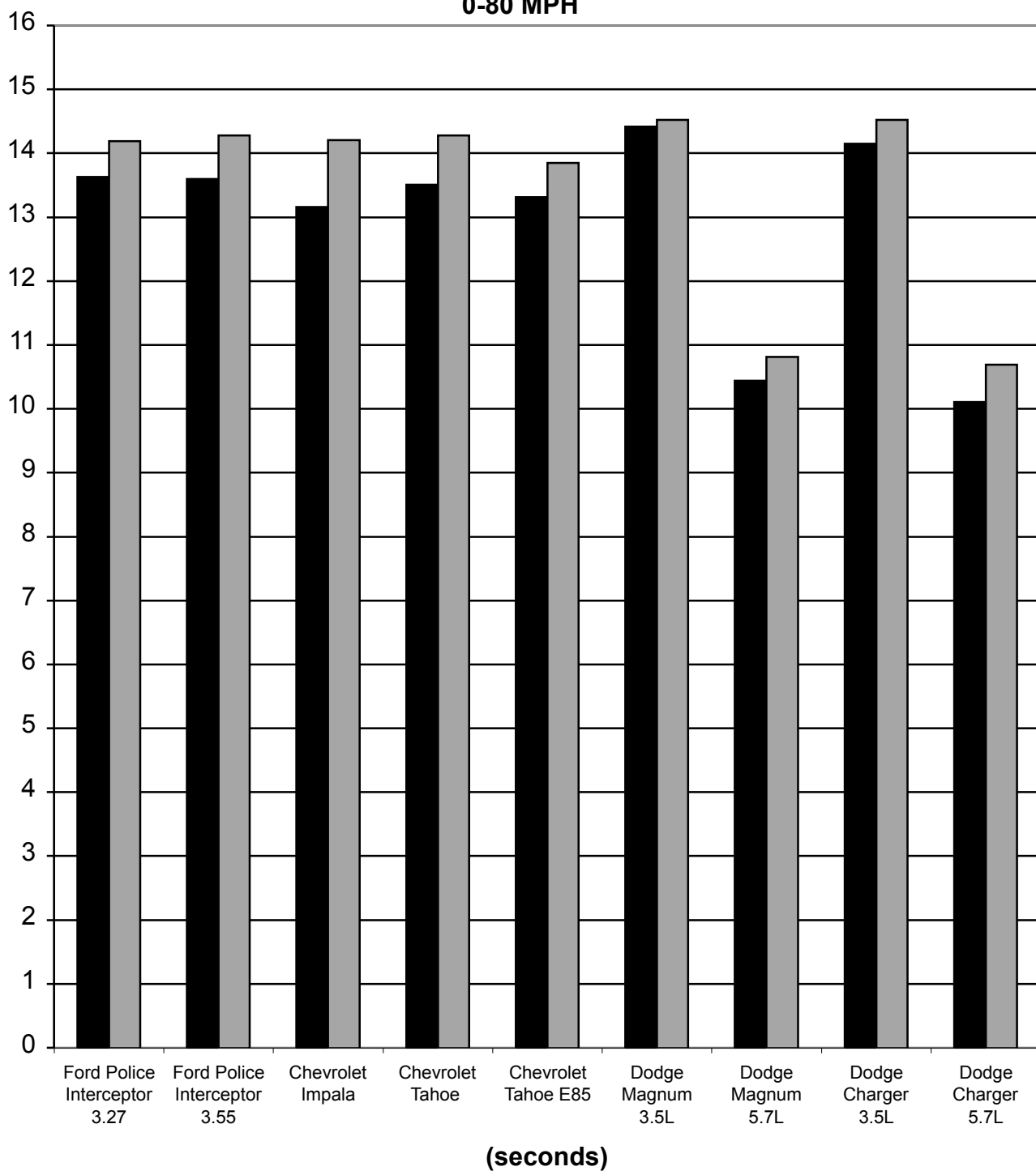
■ 2008 ■ 2007

2007-08 ACCELERATION COMPARISON



2007-08 ACCELERATION COMPARISON

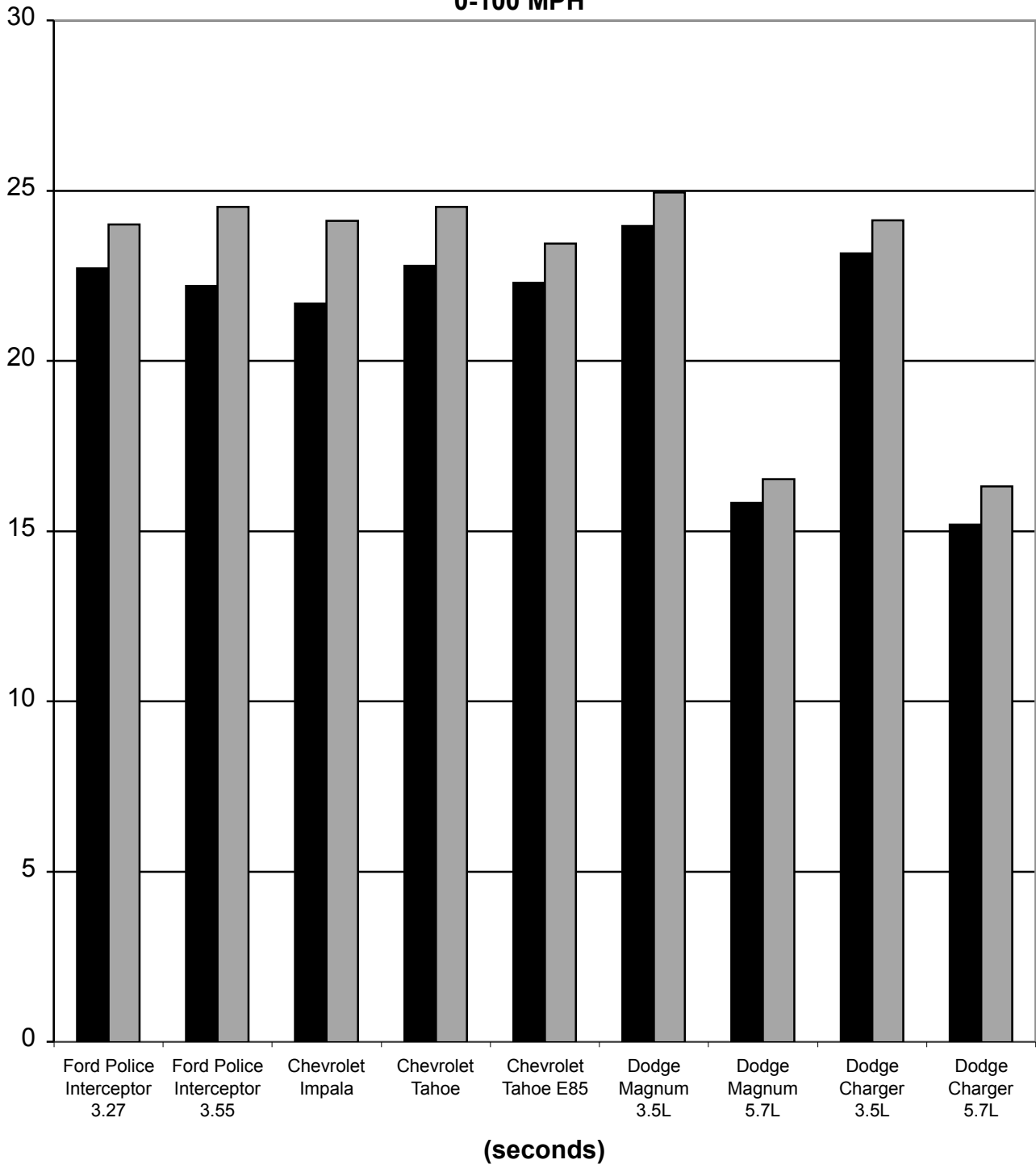
0-80 MPH



■ 2008 ■ 2007

2007-08 ACCELERATION COMPARISON

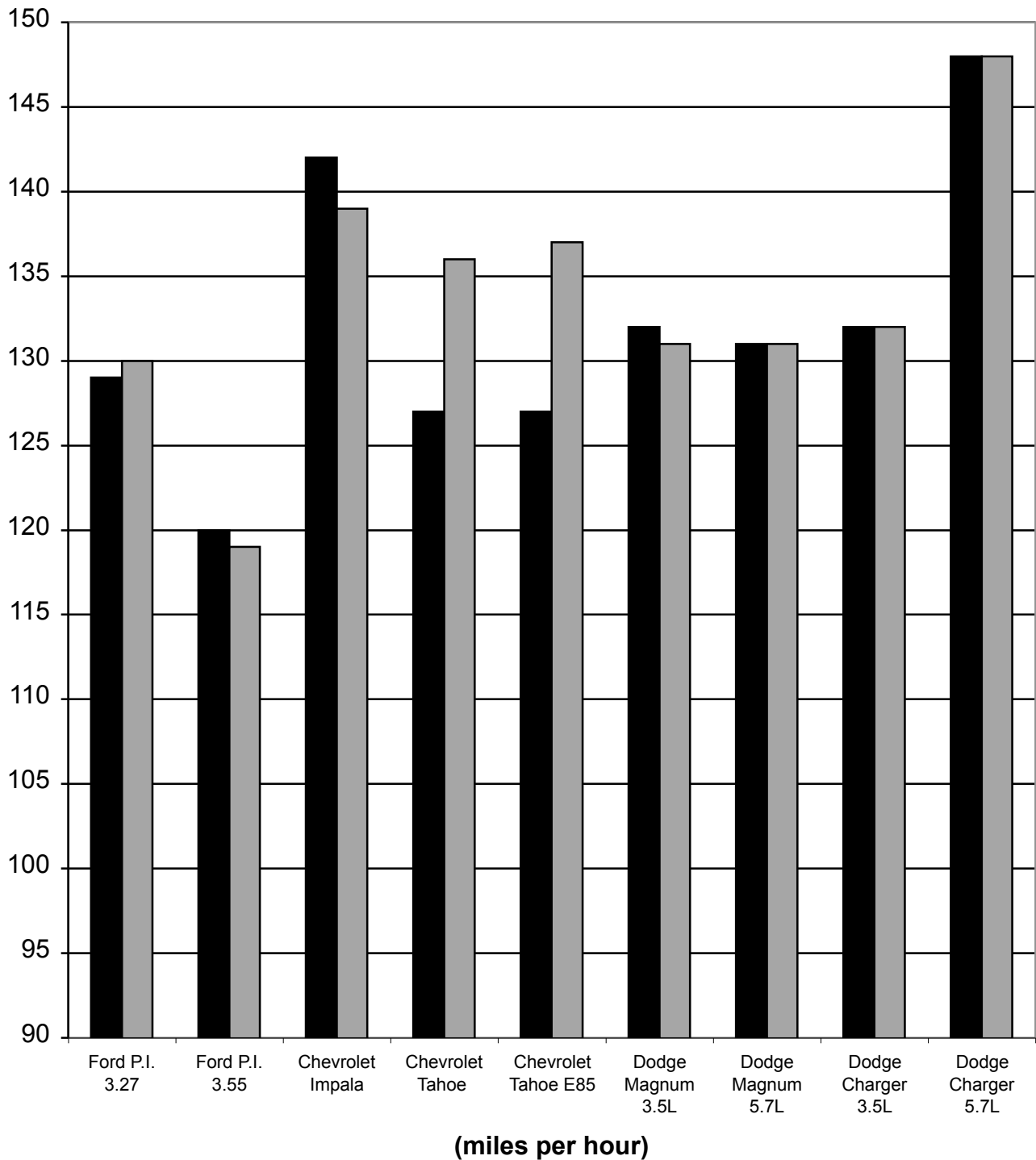
0-100 MPH



■ 2008 ■ 2007

2007- 08 TOP SPEED COMPARISON

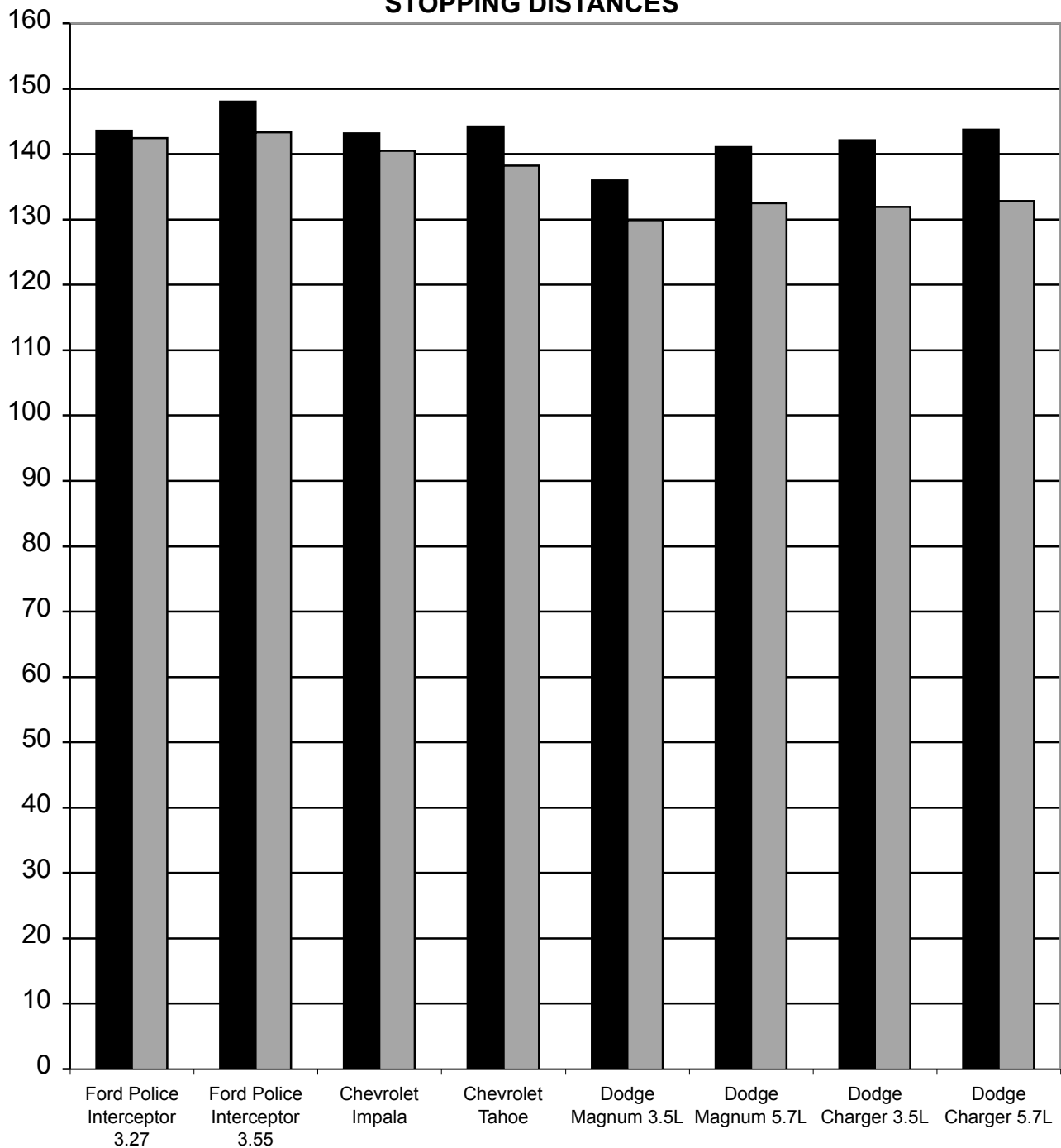
TOP SPEED ATTAINED



■ 2008 ■ 2007

2007-08 BRAKE TESTING COMPARISON

STOPPING DISTANCES



(in "feet" from 60 mph)

■ 2008 ■ 2007

SPECIAL SERVICE VEHICLES

The issue of what makes a police vehicle a “police package” is a matter that will be with us for some time. Many law enforcement agencies still require a police vehicle to be capable of participating in a pursuit and look to the manufacturers to put their engineering talents towards that goal. At the same time some law enforcement agencies need a vehicle that has cargo capacity and other attributes, but does not require pursuit capabilities. For this, the manufacturers offer “special service” vehicles.

The Michigan Department of State Police presents this information on “special service” vehicles with the caveat that the reader is aware that these vehicles are not engineered for high speed or pursuit driving. The vehicles were tested in all the categories except vehicle dynamics, which is high-speed handling and represents pursuit applications.

The special service vehicles were tested in the following: Acceleration, Top Speed, Braking, Fuel Economy, and Ergonomics & Communications.

SPECIAL SERVICE VEHICLES ARE NOT ENGINEERED FOR HIGH SPEED AND PURSUIT APPLICATIONS.



Chevrolet Tahoe

4WD 5.3L SPFI



TEST VEHICLE DESCRIPTION

MAKE Chevrolet	MODEL Tahoe 5.3L – 4WD		SALES CODE NO. CK10706	
ENGINE DISPLACEMENT	CUBIC INCHES 325		LITERS 5.3	
FUEL SYSTEM	Sequential Port Fuel Injection		EXHAUST Single	
HORSEPOWER (SAE NET)	320 @ 5200 RPM		ALTERNATOR 160	
TORQUE	340 ft-lbs @ 4000 RPM		BATTERY 730 CCA	
COMPRESSION RATIO	9.5:1			
TRANSMISSION	MODEL 4L60E		TYPE 4 – Speed Automatic Overdrive	
	LOCKUP TORQUE CONVERTER? Yes			
	OVERDRIVE? Yes			
AXLE RATIO	3.73			
STEERING	Power – Rack & Pinion			
TURNING CIRCLE (CURB TO CURB)	39.0 ft.			
TIRE SIZE, LOAD & SPEED RATING	Goodyear Wrangler P265/70R17 113S			
SUSPENSION TYPE (FRONT)	Independent, single coil over shock w/ stabilizer bar			
SUSPENSION TYPE (REAR)	Multi-link with coil springs			
GROUND CLEARANCE, MINIMUM	9.1 in.	LOCATION Rear Axle		
BRAKE SYSTEM	Vacuum boost, power, anti-lock			
BRAKES, FRONT	TYPE Disc		SWEPT AREA 213 sq. in.	
BRAKES, REAR	TYPE Disc		SWEPT AREA 133 sq. in.	
FUEL CAPACITY	GALLONS 26.0		LITERS 98.4	
GENERAL MEASUREMENTS	WHEELBASE 116 in.		LENGTH 202.0 in.	
	TEST WEIGHT 5589		HEIGHT 76.9 in.	
HEADROOM	FRONT 40.3 in.		REAR 39.2 in.	
LEGROOM	FRONT 41.3 in.		REAR 39.0 in.	
SHOULDER ROOM	FRONT 65.3 in.		REAR 65.2 in.	
HIPROOM	FRONT 64.4 in.		REAR 60.6 in.	
INTERIOR VOLUME *MAX. CARGO IS W/REAR SEATS FOLDED DOWN	FRONT 62.9 cu. ft.		REAR 57.68 cu. ft.	
	COMB 120.58 cu. ft.		*MAX. CARGO 108.9 cu. ft.	
EPA MILEAGE EST. (MPG)	CITY 14	HIGHWAY 19		COMBINED 16

Chevrolet Suburban

3/4Ton 4WD 6.0L SPFI



TEST VEHICLE DESCRIPTION

MAKE Chevrolet	MODEL Suburban 3/4 Ton		SALES CODE NO. CK20906	
ENGINE DISPLACEMENT	CUBIC INCHES 400		LITERS 6.0	
FUEL SYSTEM	Sequential Port Fuel Injection		EXHAUST Single	
HORSEPOWER (SAENET)	352		ALTERNATOR 160	
TORQUE	383		BATTERY 600 CCA	
COMPRESSION RATIO	9.6			
TRANSMISSION	MODEL 6L90E		TYPE 6 – Speed Hydromatic	
	LOCKUP TORQUE CONVERTER? Yes			
	OVERDRIVE? Yes			
AXLE RATIO	3.73			
STEERING	Recirculating Ball			
TURNING CIRCLE (CURB TO CURB)	45.3			
TIRE SIZE, LOAD & SPEED RATING	Bridgestone Duravis LT245/75R16 M773 II			
SUSPENSION TYPE (FRONT)	Standard long-and short arm independent front torsion bar suspension			
SUSPENSION TYPE (REAR)	Semi-elliptic 2-stage multileaf spring			
GROUND CLEARANCE, MINIMUM	9.1 in.		LOCATION Rear Axle	
BRAKE SYSTEM	Power-assisted, Hydroboost brake-apply system, 4-wheel disc, 4-wheel ABS			
BRAKES, FRONT	TYPE Disc		SWEPT AREA 233 sq. in.	
BRAKES, REAR	TYPE Disc		SWEPT AREA 133 sq. in.	
FUEL CAPACITY	GALLONS 39		LITERS 148	
GENERAL MEASUREMENTS	WHEELBASE 130.0 in.		LENGTH 222.4 in.	
	TEST WEIGHT 6342		HEIGHT 76.8 in.	
HEADROOM	FRONT 41.1 in		REAR 38.1 in.	
LEGROOM	FRONT 41.3 in.		REAR 34.9in.	
SHOULDER ROOM	FRONT 65.3 in.		REAR 64.7 in.	
HIPROOM	FRONT 64.4 in.		REAR 61.8 in.	
INTERIOR VOLUME *MAX. CARGO IS W/REAR SEATS FOLDED DOWN	FRONT 60.9 cu.ft.		REAR 56.28 cu.ft.	
	COMB 127.18 cu.ft.		*MAX. CARGO 137.4 cu.ft.	
EPA MILEAGE EST. (MPG)	CITY Unregulated		HIGHWAY Unregulated	
			COMBINED Unregulated	

Trucks with Gross Vehicle Weight Ratings over 8,500 lbs are not included in the EPA fuel economy rating system. Fuel economy information on these models is generally not available because of wide variances in vehicle loading and operational conditions between various customer applications.

Ford Explorer

4.6L SMFI



TEST VEHICLE DESCRIPTION

MAKE Ford	MODEL Explorer 2WD		SALES CODE NO. U63			
ENGINE DISPLACEMENT	CUBIC INCHES 281		LITERS 4.6			
FUEL SYSTEM	Sequential Multiport Fuel Injection		EXHAUST Single			
HORSEPOWER (SAE NET)	292@ 5750 RPM		ALTERNATOR 130 amp.			
TORQUE	300 lb-ft @ 3950 RPM		BATTERY 650 CCA			
COMPRESSION RATIO	9.3:1					
TRANSMISSION	MODEL 5R55		TYPE 6-Speed Automatic Overdrive			
	LOCKUP TORQUE CONVERTER? Yes					
	OVERDRIVE? Yes					
AXLE RATIO	3.55					
STEERING	Power rack and pinion					
TURNING CIRCLE (CURB TO CURB)	36.8 ft.					
TIRE SIZE, LOAD & SPEED RATING	Goodyear Fortera P235/70R16 104S					
SUSPENSION TYPE (FRONT)	Independent SLA with coil spring					
SUSPENSION TYPE (REAR)	Independent SLA with coil spring					
GROUND CLEARANCE, MINIMUM	8.5 in.		LOCATION Transmission crossmember			
BRAKE SYSTEM	Power disc w/ 4-wheel ABS					
BRAKES, FRONT	TYPE Disc		SWEPT AREA 293.3sq. in.			
BRAKES, REAR	TYPE Disc		SWEPT AREA 217.3 sq. in.			
FUEL CAPACITY	GALLONS 22.5		LITERS 85.1			
GENERAL MEASUREMENTS	WHEELBASE 113.7 in.		LENGTH 193.4 in.			
	TEST WEIGHT 4711		HEIGHT 72.2 in.			
HEADROOM	FRONT 39.8 in.		REAR 38.7 in.			
LEGROOM	FRONT 42.4 in.		REAR 36.9 in.			
SHOULDER ROOM	FRONT 59.0 in.		REAR 58.9 in.			
HIPROOM	FRONT 55.4 in.		REAR 55.5 cu. ft.			
INTERIOR VOLUME *MAX. CARGO IS W/REAR SEATS FOLDED DOWN	FRONT 57.6 cu. ft.		REAR 48.7 cu. ft.			
	COMB 106.3 cu. ft.		*MAX. CARGO 83.7 cu. ft.			
EPA MILEAGE EST. (MPG)	CITY 13		HIGHWAY 20		COMBINED 16	

Ford Expedition

5.4L 3V SMFI



TEST VEHICLE DESCRIPTION

MAKE Ford	MODEL Expedition 2WD		SALES CODE NO. U15	
ENGINE DISPLACEMENT	CUBIC INCHES 330		LITERS	5.4
FUEL SYSTEM	Sequential Multiport Fuel Injection		EXHAUST	Single
HORSEPOWER (SAE NET)	300 @ 5000 RPM		ALTERNATOR	150 amp.
TORQUE	365 ft-lbs @ 3750 RPM		BATTERY	650 CCA
COMPRESSION RATIO	9.8:1			
TRANSMISSION	MODEL 6R75	TYPE 6-Speed Automatic		
	LOCKUP TORQUE CONVERTER? Yes			
	OVERDRIVE? Yes			
AXLE RATIO	3.31 standard			
STEERING	Low-friction rack and pinion with power assist			
TURNING CIRCLE (CURB TO CURB)	40.8 ft.			
TIRE SIZE, LOAD & SPEED RATING	Continental ContiTrac SUV P265/70R17 113S			
SUSPENSION TYPE (FRONT)	Independent, double-wishbone, short- and long-arms (SLA) design with coil-over shocks, 36 mm stabilizer bar			
SUSPENSION TYPE (REAR)	Independent, multilink design with coil-over shocks. 18mm, 19mm or 21mm stabilizer bar			
GROUND CLEARANCE, MINIMUM	8.7 in.	LOCATION Rear differential		
BRAKE SYSTEM	Four wheel power disc brakes with standard 4 sensor, 4 channel anti-lock braking system (ABS) and AdvanceTrac® with Roll Stability Control			
BRAKES, FRONT	TYPE Disc	SWEPT AREA 283.6 sq. in.		
BRAKES, REAR	TYPE Disc	SWEPT AREA 159.0 sq. in.		
FUEL CAPACITY	GALLONS 28.0	LITERS	106.0	
GENERAL MEASUREMENTS	WHEELBASE 119.0 in.	LENGTH	205.8 in.	
	TEST WEIGHT 5598	HEIGHT	76.7 in.	
HEADROOM	FRONT 39.6 in.	REAR	39.8 in.	
LEGROOM	FRONT 41.2 in.	REAR	39.1 in.	
SHOULDER ROOM	FRONT 63.2 in.	REAR	63.7 in.	
HIPROOM	FRONT 60.2 in.	REAR	59.1 in.	
INTERIOR VOLUME *MAX. CARGO IS W/REAR SEATS FOLDED DOWN	FRONT 59.6 cu. ft.	REAR	57.3 cu. ft.	
	COMB 116.9 cu. ft.	*MAX. CARGO 108.3 cu. ft.		
EPA MILEAGE EST. (MPG)	CITY 12	HIGHWAY 18	COMBINED 14	

Ford F150 Super Crew

2WD 5.4L EFI



TEST VEHICLE DESCRIPTION

MAKE Ford	MODEL F150 SuperCrew XL 4x2 Styleside		SALES CODE NO. W12	
ENGINE DISPLACEMENT	CUBIC INCHES 330		LITERS 5.4L	
FUEL SYSTEM	EFI		EXHAUST Single	
HORSEPOWER (SAE NET)	300 @ 5000		ALTERNATOR 110 amp	
TORQUE	365 @ 3750		BATTERY 540 CCA	
COMPRESSION RATIO	9:8:1			
TRANSMISSION	MODEL 4R75E		TYPE 4 Speed Electronic Automatic	
	LOCKUP TORQUE CONVERTER? Yes			
	OVERDRIVE? Yes			
AXLE RATIO	3.55 limited slip			
STEERING	Power; rack and pinion			
TURNING CIRCLE (CURB TO CURB)	45.1 ft.			
TIRE SIZE, LOAD & SPEED RATING	BF Goodrich Radial LongTrail T/A P265/60R18			
SUSPENSION TYPE (FRONT)	Coil, computer selected			
SUSPENSION TYPE (REAR)	Leaf, two-stage variable rate, computer selected			
GROUND CLEARANCE, MINIMUM	14.1	LOCATION Rear Axle		
BRAKE SYSTEM	4-wheel disc with ABS			
BRAKES, FRONT	TYPE Disc.		SWEPT AREA 297.5 sq. in.	
BRAKES, REAR	TYPE Disc.		SWEPT AREA 255.7 sq. in.	
FUEL CAPACITY	GALLONS 30.0		LITERS 114.0	
GENERAL MEASUREMENTS	WHEELBASE 139.0 in.		LENGTH 223.8 in.	
	TEST WEIGHT 5326		HEIGHT 73.4 in.	
HEADROOM	FRONT 40.1 in.		REAR 39.6 in.	
LEGROOM	FRONT 41.3 in.		REAR 39.0 in.	
SHOULDER ROOM	FRONT 65.8 in.		REAR 65.8 in.	
HIPROOM	FRONT 63.8 in.		REAR 63.1 in.	
INTERIOR VOLUME *MAX. CARGO IS W/REAR SEATS FOLDED DOWN	FRONT 63.1 cu. ft..		REAR 58.7 cu. ft.	
	COMB 121.8 cu. ft.		*MAX. CARGO 49.5 cu. ft.	
EPA MILEAGE EST. (MPG)	CITY 13	HIGHWAY 17		COMBINED 14

TEST VEHICLE DESCRIPTION SUMMARY

	Chevrolet Tahoe 4WD	Ford Explorer	Ford Expedition
ENGINE DISPLACEMENT – CU. IN.	325	281	330
ENGINE DISPLACEMENT – LITERS	5.3	4.6	5.4
ENGINE FUEL SYSTEM	SPFI	SMFI	SMFI
HORSEPOWER (SAE NET)	320	292	300
TORQUE (FT. LBS.)	340	300	365
COMPRESSION RATIO	9.5:1	9.3:1	9.8:1
AXLE RATIO	3.73	3.55	3.31
TURNING CIRCLE – FT. CURB TO CURB	39.0	36.8	40.8
TRANSMISSION	4 Speed auto	6 Speed Auto	6 Speed Auto
TRANSMISSION MODEL NUMBER	4L60E	5R55	6R75
LOCKUP TORQUE CONVERTER	Yes	Yes	Yes
TRANSMISSION OVERDRIVE	Yes	Yes	Yes
TIRE SIZE	265/70R	P235/70R	P265/70R
WHEEL RIM SIZE – INCHES	17	16	17
GROUND CLEARANCE – INCHES	9.1	8.5	8.7
BRAKE SYSTEM	Power, ABS	Power, ABS	Power, ABS
BRAKES – FRONT TYPE	Disc	Disc	Disc
BRAKES – REAR TYPE	Disc	Disc	Disc
FUEL CAPACITY – GALLONS	26	22.5	28
FUEL CAPACITY – LITERS	98.4	85.1	106
OVERALL LENGTH – INCHES	202.0	193.4	205.8
OVERALL HEIGHT – INCHES	76.9	72.2	76.7
TEST WEIGHT – LBS.	5589	4711	5598
WHEELBASE – INCHES	116	113.7	119
HEADROOM FRONT – INCHES	40.3	39.8	39.6
HEADROOM REAR – INCHES	39.2	38.7	39.8
LEGROOM FRONT – INCHES	41.3	42.4	41.2
LEGROOM REAR – INCHES	39.0	36.9	39.1
SHOULDER ROOM FRONT – INCHES	65.3	59.0	63.2
SHOULDER ROOM REAR – INCHES	65.2	58.9	63.7
HIPROOM FRONT – INCHES	64.4	55.4	60.2
HIPROOM REAR – INCHES	60.6	55.5	59.1
INTERIOR VOLUME FRONT – CU. FT.	62.9	57.6	59.6
INTERIOR VOLUME REAR – CU. FT.	57.68	48.7	57.3
INTERIOR VOLUME COMB. – CU. FT.	120.58	106.3	116.9
REAR MAXIMUM CARGO – CU. FT.	108.9	83.7	108.3
EPA MILEAGE – CITY – MPG	14	13	12
EPA MILEAGE – HIGHWAY – MPG	19	20	18
EPA MILEAGE – COMBINED – MPG	16	16	14

TEST VEHICLE DESCRIPTION SUMMARY

	Ford F-150 2WD	Chev Suburban 3/4 Ton
ENGINE DISPLACEMENT – CU. IN.	330	400
ENGINE DISPLACEMENT – LITERS	5.4	6.0
ENGINE FUEL SYSTEM	EFI	SPFI
HORSEPOWER (SAE NET)	300	352
TORQUE (FT. LBS.)	300	383
COMPRESSION RATIO	9.8:1	9.6:1
AXLE RATIO	3.55	3.73
TURNING CIRCLE – FT. CURB TO CURB	45.1	45.3
TRANSMISSION	4 Speed Auto	6 Speed Auto
TRANSMISSION MODEL NUMBER	4R75E	6L90E
LOCKUP TORQUE CONVERTER	Yes	Yes
TRANSMISSION OVERDRIVE	Yes	Yes
TIRE SIZE	P265/60R	LT245/75R
WHEEL RIM SIZE – INCHES	18	16
GROUND CLEARANCE – INCHES	14.1	8.7
BRAKE SYSTEM	Power, ABS	Power, ABS
BRAKES – FRONT TYPE	Disc	Disc
BRAKES – REAR TYPE	Disc	Disc
FUEL CAPACITY – GALLONS	30	39.0
FUEL CAPACITY – LITERS	114	148
OVERALL LENGTH – INCHES	223.8	222.4
OVERALL HEIGHT – INCHES	73.4	76.8
TEST WEIGHT – LBS.	5326	6342
WHEELBASE – INCHES	139.0	130.0
HEADROOM FRONT – INCHES	40.1	41.1
HEADROOM REAR – INCHES	39.6	38.1
LEGROOM FRONT – INCHES	41.3	41.3
LEGROOM REAR – INCHES	39.0	34.9
SHOULDER ROOM FRONT – INCHES	65.8	65.3
SHOULDER ROOM REAR – INCHES	65.8	64.7
HIPROOM FRONT – INCHES	63.8	64.4
HIPROOM REAR – INCHES	63.1	61.8
INTERIOR VOLUME FRONT – CU. FT.	63.1	60.9
INTERIOR VOLUME REAR – CU. FT.	58.7	56.28
INTERIOR VOLUME COMB. – CU. FT.	121.8	127.18
REAR MAXIMUM CARGO – CU. FT.	49.5	137.4
EPA MILEAGE – CITY – MPG	13	*N/A
EPA MILEAGE – HIGHWAY – MPG	17	*N/A
EPA MILEAGE – COMBINED – MPG	14	*N/A

SUMMARY OF ACCELERATION AND TOP SPEED

	Chevrolet Tahoe 4WD 5.3L SPFI	Ford Explorer 2WD 4.6L SMFI	Ford Expedition 2WD 5.4L SMFI	Ford F-150 2WD Super Crew 5.4L SMFI	Chevy Suburban ¾ Ton 4WD 6.0L SPFI
ACCELERATION*					
0 – 20 mph (sec.)	2.20	1.88	1.83	2.01	2.21
0 – 30 mph (sec.)	3.52	3.01	3.08	3.39	3.29
0 – 40 mph (sec.)	4.81	4.53	4.62	4.76	4.81
0 – 50 mph (sec.)	6.77	6.14	6.39	6.78	6.49
0 – 60 mph (sec.)	9.14	8.19	8.81	9.12	8.75
0 – 70 mph (sec.)	11.61	10.74	11.41	11.64	11.32
0 – 80 mph (sec.)	14.71	13.59	14.65	14.86	14.19
0 – 90 mph (sec.)	20.19	17.23	18.88	20.03	18.36
0 – 100 mph (sec.)		22.17	24.12		
TOP SPEED (mph)	97	104	105	95	97
QUARTER MILE					
Time (sec.)	16.96	16.39	16.70	16.92	16.75
Speed (miles)	84.20	87.88	85.08	84.05	86.28

BRAKE TESTING

TEST LOCATION: Chrysler Proving Grounds

DATE: September 17, 2007

BEGINNING Time: 12:45 p.m.

TEMPERATURE: 54.8°F

MAKE & MODEL: Ford Explorer 4.6L 2WD

BRAKE SYSTEM: Anti-lock

Phase I

BRAKE HEAT-UP: (Two 90 → 0 mph decelerations @ 22 ft.sec.²)

TEST: (Six 60 → mph impending skid (ABS) maximum deceleration rate stops)

	Initial Velocity	Stopping Distance	Deceleration Rate
Stop #1	59.8 mph	161.4 feet	23.82 ft/s ²
Stop #2	60.5 mph	163.5 feet	24.07 ft/s ²
Stop #3	61.3 mph	165.0 feet	24.47 ft/s ²
Stop #4	59.3 mph	151.7 feet	24.91 ft/s ²
Stop #5	59.8 mph	150.6 feet	25.53 ft/s ²
Stop #6	58.8 mph	147.8 feet	25.14 ft/s ²

AVERAGE DECELERATION RATE

24.66 ft/s²

HEAT SOAK (4 minutes)

Phase II

BRAKE HEAT-UP: (Two 90 → 0 mph decelerations @ 22 ft.sec.²)

TEST: (Six 60 → mph impending skid (ABS) maximum deceleration rate stops)

	Initial Velocity	Stopping Distance	Deceleration Rate
Stop #1	60.4 mph	156.1 feet	25.11 ft/s ²
Stop #2	59.8 mph	152.0 feet	25.27 ft/s ²
Stop #3	60.6 mph	168.0 feet	23.49 ft/s ²
Stop #4	60.4 mph	155.2 feet	25.26 ft/s ²
Stop #5	60.1 mph	155.3 feet	24.98 ft/s ²
Stop #6	60.5 mph	158.3 feet	24.86 ft/s ²

AVERAGE DECELERATION RATE

24.83 ft/s²

Phase III

Evidence of severe fading?

Yes/No

No

Vehicle stopped in straight line?

Yes

Vehicle stopped within correct lane?

Yes

OVERALL AVERAGE DECEL. RATE:

24.74 ft/s²

Projected Stopping Distance from 60.0 mph

156.5

BRAKE TESTING

TEST LOCATION: Chrysler Proving Grounds

DATE: September 17, 2007

BEGINNING Time: 10:46 a.m.

TEMPERATURE: 51.9°F

MAKE & MODEL: Ford Expedition 5.4L 3V 2WD

BRAKE SYSTEM: Anti-lock

Phase I

BRAKE HEAT-UP: (Two 90 –0 mph decelerations @ 22 ft.sec.²)

TEST: (Six 60 – mph impending skid (ABS) maximum deceleration rate stops)

	Initial Velocity	Stopping Distance	Deceleration Rate
Stop #1	61.0 mph	159.5 feet	25.09 ft/s ²
Stop #2	61.2 mph	161.8 feet	24.87 ft/s ²
Stop #3	60.4 mph	157.8 feet	24.90 ft/s ²
Stop #4	60.3 mph	159.5 feet	24.50 ft/s ²
Stop #5	60.4 mph	155.9 feet	25.20 ft/s ²
Stop #6	60.9 mph	160.2 feet	24.90 ft/s ²

AVERAGE DECELERATION RATE

24.91 ft/s²

HEAT SOAK (4 minutes)

Phase II

BRAKE HEAT-UP: (Two 90 –0 mph decelerations @ 22 ft.sec.²)

TEST: (Six 60 – mph impending skid (ABS) maximum deceleration rate stops)

	Initial Velocity	Stopping Distance	Deceleration Rate
Stop #1	60.6 mph	157.1 feet	25.11 ft/s ²
Stop #2	60.4 mph	160.7 feet	24.45 ft/s ²
Stop #3	61.1 mph	151.8 feet	26.41 ft/s ²
Stop #4	60.4 mph	163.0 feet	24.04 ft/s ²
Stop #5	60.6 mph	165.0 feet	23.93 ft/s ²
Stop #6	60.3 mph	170.9 feet	22.90 ft/s ²

AVERAGE DECELERATION RATE

24.47 ft/s²

Phase III

Evidence of severe fading?

Yes/No

No

Vehicle stopped in straight line?

Yes

Vehicle stopped within correct lane?

Yes

OVERALL AVERAGE DECEL. RATE:

24.69 ft/s²

Projected Stopping Distance from 60.0 mph 156.8

BRAKE TESTING

TEST LOCATION: Chrysler Proving Grounds

DATE: September 17, 2007

BEGINNING Time: 8:30 a.m.

TEMPERATURE: 43.3°F

MAKE & MODEL: Chevy Suburban ¾ Ton 4WD 6.0L SPFI

BRAKE SYSTEM: Anti-lock

Phase I

BRAKE HEAT-UP: (Two 90 → 0 mph decelerations @ 22 ft.sec.²)

TEST: (Six 60 → mph impending skid (ABS) maximum deceleration rate stops)

	Initial Velocity	Stopping Distance	Deceleration Rate
Stop #1	60.3 mph	157.1 feet	24.88 ft/s ²
Stop #2	60.3 mph	159.5 feet	24.56 ft/s ²
Stop #3	60.2 mph	157.4 feet	24.73 ft/s ²
Stop #4	60.3 mph	156.9 feet	24.94 ft/s ²
Stop #5	59.9 mph	155.7 feet	24.81 ft/s ²
Stop #6	60.1 mph	156.8 feet	24.81 ft/s ²

AVERAGE DECELERATION RATE

24.79 ft/s²

HEAT SOAK (4 minutes)

Phase II

BRAKE HEAT-UP: (Two 90 → 0 mph decelerations @ 22 ft.sec.²)

TEST: (Six 60 → mph impending skid (ABS) maximum deceleration rate stops)

	Initial Velocity	Stopping Distance	Deceleration Rate
Stop #1	59.7 mph	155.2 feet	24.73 ft/s ²
Stop #2	59.9 mph	157.7 feet	24.46 ft/s ²
Stop #3	60.3 mph	154.8 feet	25.30 ft/s ²
Stop #4	60.1 mph	160.5 feet	24.18 ft/s ²
Stop #5	60.3 mph	157.5 feet	24.81 ft/s ²
Stop #6	60.4 mph	157.9 feet	24.85 ft/s ²

AVERAGE DECELERATION RATE

24.72 ft/s²

Phase III

Evidence of severe fading?

Yes/No

No

Vehicle stopped in straight line?

Yes

Vehicle stopped within correct lane?

Yes

OVERALL AVERAGE DECEL. RATE:

24.76 ft/s²

Projected Stopping Distance from 60.0 mph 156.4

BRAKE TESTING

TEST LOCATION: Chrysler Proving Grounds

DATE: September 17, 2007

BEGINNING Time: 7:30 a.m.

TEMPERATURE: 40.1°F

MAKE & MODEL: Chevrolet Tahoe 5.3L 4WD

BRAKE SYSTEM: Anti-lock

Phase I

BRAKE HEAT-UP: (Two 90 → 0 mph decelerations @ 22 ft./sec.²)

TEST: (Six 60 → mph impending skid (ABS) maximum deceleration rate stops)

	Initial Velocity	Stopping Distance	Deceleration Rate
Stop #1	60.7 mph	166.7 feet	23.77 ft/s ²
Stop #2	61.2 mph	166.5 feet	24.16 ft/s ²
Stop #3	61.2 mph	161.5 feet	24.94 ft/s ²
Stop #4	60.6 mph	158.1 feet	24.98 ft/s ²
Stop #5	59.9 mph	156.1 feet	24.73 ft/s ²
Stop #6	61.1 mph	172.3 feet	23.31 ft/s ²

AVERAGE DECELERATION RATE

24.32 ft/s²

HEAT SOAK (4 minutes)

Phase II

BRAKE HEAT-UP: (Two 90 → 0 mph decelerations @ 22 ft./sec.²)

TEST: (Six 60 → mph impending skid (ABS) maximum deceleration rate stops)

	Initial Velocity	Stopping Distance	Deceleration Rate
Stop #1	60.4 mph	187.1 feet	20.97 ft/s ²
Stop #2	60.8 mph	192.0 feet	20.69 ft/s ²
Stop #3	60.4 mph	186.7 feet	21.02 ft/s ²
Stop #4	60.3 mph	188.9 feet	20.70 ft/s ²
Stop #5	60.3 mph	204.0 feet	19.17 ft/s ²
Stop #6	60.3 mph	205.0 feet	19.08 ft/s ²

AVERAGE DECELERATION RATE

20.27 ft/s²

Phase III

	Yes/No
Evidence of severe fading?	<u>Yes</u>
Vehicle stopped in straight line?	<u>Yes</u>
Vehicle stopped within correct lane?	<u>Yes</u>

OVERALL AVERAGE DECEL. RATE:

22.29 ft/s²

Projected Stopping Distance from 60.0 mph 173.7

BRAKE TESTING

TEST LOCATION: Chrysler Proving Grounds

DATE: September 17, 2007

BEGINNING Time: 7:50 a.m.

TEMPERATURE: 40.4°F

MAKE & MODEL: Ford F-150 Super Crew

BRAKE SYSTEM: Anti-lock

Phase I

BRAKE HEAT-UP: (Two 90 → 0 mph decelerations @ 22 ft.sec.²)

TEST: (Six 60 → mph impending skid (ABS) maximum deceleration rate stops)

	Initial Velocity	Stopping Distance	Deceleration Rate
Stop #1	60.1 mph	149.3 feet	26.03 ft/s ²
Stop #2	60.2 mph	148.5 feet	26.25 ft/s ²
Stop #3	60.3 mph	151.4 feet	25.79 ft/s ²
Stop #4	61.5 mph	156.0 feet	26.10 ft/s ²
Stop #5	61.1 mph	157.6 feet	25.48 ft/s ²
Stop #6	60.7 mph	148.5 feet	26.69 ft/s ²

AVERAGE DECELERATION RATE

26.06 ft/s²

HEAT SOAK (4 minutes)

Phase II

BRAKE HEAT-UP: (Two 90 → 0 mph decelerations @ 22 ft.sec.²)

TEST: (Six 60 → mph impending skid (ABS) maximum deceleration rate stops)

	Initial Velocity	Stopping Distance	Deceleration Rate
Stop #1	60.4 mph	147.9 feet	26.53 ft/s ²
Stop #2	60.4 mph	148.6 feet	26.41 ft/s ²
Stop #3	60.3 mph	147.1 feet	26.59 ft/s ²
Stop #4	60.5 mph	149.2 feet	26.40 ft/s ²
Stop #5	59.8 mph	145.6 feet	26.42 ft/s ²
Stop #6	61.1 mph	150.5 feet	26.68 ft/s ²

AVERAGE DECELERATION RATE

26.50 ft/s²

Phase III

	Yes/No
Evidence of severe fading?	<u>No</u>
Vehicle stopped in straight line?	<u>Yes</u>
Vehicle stopped within correct lane?	<u>Yes</u>

OVERALL AVERAGE DECEL. RATE:

26.28 ft/s²

Projected Stopping Distance from 60.0 mph 147.3

ERGONOMICS AND COMMUNICATIONS

ERGONOMICS	Ford Explorer	Ford Expedition	Chevrolet Tahoe 4WD	Ford F-150 2WD	Chev Suburban ¾ Ton 4WD
FRONT SEAT					
Padding	5.60	5.90	7.00	6.30	7.00
Depth of Bucket Seat	5.40	5.50	6.10	5.90	6.10
Adjustability – Front to Rear	5.90	6.50	6.60	6.90	6.80
Upholstery	6.30	6.70	6.40	7.20	6.50
Bucket Seat Design	5.60	6.50	6.40	6.40	6.40
Headroom	6.70	7.60	8.20	7.30	8.30
Seatbelts	5.00	7.56	6.40	5.80	6.20
Ease of Entry and Exit	5.80	6.90	7.00	6.80	7.30
Overall Comfort Rating	5.90	6.50	7.80	6.50	7.40
REAR SEAT					
Leg room – Front seat back	4.80	7.00	7.20	7.00	7.70
Ease of Entry and Exit	5.10	6.90	6.50	6.90	6.90
INSTRUMENTATION					
Clarity	5.50	5.90	7.30	7.70	6.90
Placement	5.20	5.60	6.10	7.90	6.50
VEHICLE CONTROLS					
Pedals, Size and Position	6.50	6.80	6.70	7.40	6.40
Power Window Switch	6.80	6.50	7.20	6.90	7.10
Inside Door Lock Switch	5.50	5.80	6.00	7.10	6.00
Automatic Door Lock Switch	7.10	6.20	6.30	6.40	6.30
Outside Mirror Controls	5.20	6.50	6.70	7.10	6.80
Steering Wheel, Size, Tilt Release, and Surface	5.40	6.60	7.40	6.50	7.30
Heat/AC Vent Placement and Adjustability	6.00	6.60	6.40	6.80	6.40
VISIBILITY					
Front (Windshield)	6.70	7.20	7.50	7.60	7.60
Rear (Back Window)	5.60	6.10	5.50	6.60	5.50
Left Rear Quarter	5.70	5.50	5.20	6.90	5.50
Right Rear Quarter	4.50	5.10	4.90	6.90	5.80
Outside Rear View Mirrors	5.90	6.80	7.30	8.10	7.50
COMMUNICATIONS					
Dashboard Accessibility	6.33	6.92	6.33	3.83	6.83
Trunk Accessibility	7.10	7.10	6.90	3.90	6.90
Engine Compartment	7.33	7.00	8.00	5.33	8.17
TOTAL SCORES	164.46	181.78	187.33	185.96	190.10

MOTORCYCLES

Like many law enforcement agencies, the Michigan State Police used motorcycles up until late 1941 and then switched to automobiles. The Michigan State Police rekindled interest in motorcycles for day to day patrol operations in 1993. In 2004, Michigan State Police headquarters asked if we had additional information as a resource for our purchasing decisions regarding motorcycles. During that time we were given direction to expand vehicle testing to include motorcycle testing. We are pleased to announce the second MSP police motorcycle test. We would like to thank Harley Davidson and BMW for participating and providing their assistance in preparation for this year's successful testing program.

We are constantly evaluating our various tests with the manufacturers and the law enforcement industry to provide you with the most objective test data available. While there are many similarities to automobiles, there are also quite a few differences. Law enforcement motorcycles will encounter a variety of surfaces during patrol operations or emergencies. Because of that, we developed a braking test with substantially different coefficient of friction surfaces. An example of this in the real world would be if a motor officer was run off the road and on to a gravel or a wet grassy surface and had to brake at the same time.

When looking at the data, it is very important for the reader to apply your mission requirements to the motorcycle you are considering so you may make an appropriate decision. This report is not an endorsement of products, but a means of learning what's available for your officers so they can do their job more effectively and safely. If anything in this report requires further explanation or clarification, please call or write.



Harley Davidson Road King (FLHP)



TEST VEHICLE DESCRIPTION

MAKE Harley Davidson	MODEL FLHP		SALES CODE NO. N/A	
ENGINE DISPLACEMENT	CUBIC CENTIMETERS 1690		CUBIC INCHES 103	
FUEL SYSTEM	EFI		EXHAUST Crossover Dual	
BORE & STROKE	3.75 x 4.38 in		ALTERNATOR 3 phase 50 amp	
TORQUE	102 Ft Lbs		BATTERY 28 Amp Hour	
COMPRESSION RATIO	9.6/1			
TRANSMISSION	PRIMARY DRIVE 34/46		FINAL DRIVE 32/66	
GEAR RATIO	2.79 overall			
LEAN ANGLE	LEFT 30 Deg		RIGHT 32 Deg	
CLUTCH	Wet multiple plate			
WHEELS/TIRES	3x16 MT/90-16 72H			
FRONT SUSPENSION	FORK ANGLE 29.3 Deg		RAKE 26 Deg	
REAR SUSPENSION	Swing Arm			
SUSPENSION TRAVEL	FRONT 4.6 in		REAR 3.0 in	
GROUND CLEARANCE, MINIMUM	5.1 in.			
BRAKE SYSTEM	Disc			
BRAKES, FRONT	TYPE Dual Disc		SWEPT AREA 180sq in	
BRAKES, REAR	TYPE Single Disc		SWEPT AREA 90sq in	
FUEL CAPACITY	GALLONS 6		LITERS	
OIL CAPACITY	4Qts			
GENERAL MEASUREMENTS	WHEELBASE 63.5 in		LENGTH 93.7	
	TEST WEIGHT 798 lbs.		OVERALL HEIGHT 61 in.	
	SEAT HEIGHT 30 in.			
EPA MILEAGE EST. (MPG)	CITY 32.5	HIGHWAY 45		COMBINED

Harley Davidson Electra Glide (FLHTP)



TEST VEHICLE DESCRIPTION

MAKE Harley Davidson	MODEL FLHTP	SALES CODE NO. N/A	
ENGINE DISPLACEMENT	CUBIC CENTIMETERS 1690	CUBIC INCHES	103
FUEL SYSTEM	EFI	EXHAUST	Crossover Dual
BORE & STROKE	3.75 x 4.38 in	ALTERNATOR	3 phase 50 amp
TORQUE	102 Ft Lbs	BATTERY	28 Amp Hour
COMPRESSION RATIO	9.6/1		
TRANSMISSION	PRIMARY DRIVE 34/46	FINAL DRIVE	32/66
GEAR RATIO	2.79 overall		
LEAN ANGLE	LEFT 30 Deg	RIGHT	32 Deg
CLUTCH	Wet multiple plate		
WHEELS/TIRES	3x16 MT/90-16 72H		
FRONT SUSPENSION	FORK ANGLE 29.3 Deg	RAKE	26 Deg
REAR SUSPENSION	Swing Arm		
SUSPENSION TRAVEL	FRONT 4.6 in	REAR	3.0 in
GROUND CLEARANCE, MINIMUM	5.1 in.		
BRAKE SYSTEM	Disc		
BRAKES, FRONT	TYPE Dual Disc	SWEPT AREA	180sq in
BRAKES, REAR	TYPE Single Disc	SWEPT AREA	90sq in
FUEL CAPACITY	GALLONS 6	LITERS	
OIL CAPACITY	4Qts		
GENERAL MEASUREMENTS	WHEELBASE 63.5 in	LENGTH	93.7
	TEST WEIGHT 799 lbs.	OVERALL HEIGHT	61 in.
	SEAT HEIGHT 30 in.		
EPA MILEAGE EST. (MPG)	CITY 32.5	HIGHWAY 45	COMBINED

BMW R1200RT-P



TEST VEHICLE DESCRIPTION

MAKE BMW	MODEL R1200RT-P		SALES CODE NO. 07RB	
ENGINE DISPLACEMENT	CUBIC CENTIMETERS 1170		Engine	2-Cylinder
FUEL SYSTEM	Injection		EXHAUST Stainless Steel with Catalytic Converter	
BORE & STROKE	101 mm x 73 mm		ALTERNATOR 720 W	
TORQUE	85 lb/ft @ 6,000 rpm		BATTERY 2 batteries at 19 Amp hours each	
COMPRESSION RATIO	12.0 : 1			
TRANSMISSION	PRIMARY DRIVE Gear 1:1.882		FINAL DRIVE No Maintenance Shaft Drive	
GEAR RATIO	1 : 2.75 rear drive ratio			
LEAN ANGLE	LEFT 46 degrees		RIGHT 46 degrees	
CLUTCH	Self-adjusting Hydraulic Actuating Single Plate Dry Clutch			
WHEELS/TIRES	Die-cast Aluminum MTH2 Rim Profile fitted with Run-Flat Tires (meets California Highway Patrol Run-Flat Protocol)			
FRONT SUSPENSION	FORK ANGLE 63.4 BMW Telelever		RAKE (Castor in normal position) 4.3 inches	
REAR SUSPENSION	BMW Evo Paralever			
SUSPENSION TRAVEL	FRONT 4.7 inches		REAR 5.3 Inches	
GROUND CLEARANCE, MINIMUM	6.1 in.			
BRAKE SYSTEM	BMW/ABS Partially Integrated Brake System			
BRAKES, FRONT	TYPE Dual 12.6 "Disc		SWEPT AREA 186 sq. in.	
BRAKES, REAR	TYPE Single 10.4" Disc		SWEPT AREA 62.3 sq. in.	
FUEL CAPACITY	GALLONS 7.1 Gal		LITERS 27	
OIL CAPACITY	4 Qts.			
GENERAL MEASUREMENTS	WHEELBASE 58.4 inches		LENGTH 87.8 inches	
	TEST WEIGHT 695 lbs.		OVERALL HEIGHT 56.3 "	
	*SEAT HEIGHT 32.2 "			
EPA MILEAGE EST. (MPG) (Based on DIN standard test)	CITY N/A	HIGHWAY 48 @ 75mph 65 @ 55mph		COMBINED N/A

*Seat height has two adjustment positions. A low seat is available making the seat height 31".

TEST VEHICLE DESCRIPTION SUMMARY

	Harley Davidson FLHP	Harley Davidson FLHTP	BMW
CUBIC CENTIMETERS	1690	1690	1170
ENGINE DISPLACEMENT – CU. IN.	103	103	71.4
ENGINE FUEL SYSTEM	EFI	EFI	Injection
EXHAUST	Crossover Dual	Crossover Dual	Stainless Steel
BORE & STROKE	3.75x4.38 (inches)	3.75x4.38 (inches)	101x73 (mm)
ALTERNATOR	3 phase, 50 amp	3 phase, 50 amp	720 watts
TORQUE - FT. LBS.	102	102	85
BATTERY	28	28	2x19
COMPRESSION RATIO	9.6/1	9.6/1	12.0:1
TRANSMISSION			
PRIMARY DRIVE	34/46	34/46	1:1.882
FINAL DRIVE	32/66	32/66	No Maintenance Shaft Drive
GEAR RATIO	2.79	2.79	1:2.75
LEAN ANGLE - LEFT	30°	30°	46°
LEAN ANGLE – RIGHT	32°	32°	46°
CLUTCH	Wet multi plate	Wet multi plate	Dry single plate
WHEELS/TIRES	3x16 MT/90-16 72H	3x16 MT/90-16 72H	Alum. MTH2
FRONT SUSPENSION			
FORK ANGLE	29.3°	29.3°	63.4°
RAKE	26°	26°	4.3 in.
REAR SUSPENSION	Swing Arm	Swing Arm	EVO Paralever
SUSPENSION TRAVEL – FRONT	4.6 in.	4.6 in.	4.7 in.
SUSPENSION TRAVEL – BACK	3.0 in.	3.0 in.	5.3 in.
GROUND CLEARANCE-MINIMUM	5.1 in.	5.1 in.	5.675 in.
BRAKE SYSTEM	Disc.	Disc.	IABS
FRONT SWEEPED AREA (sq. in.)	180	180	186.17
REAR SWEEPED AREA (sq. in.)	90	90	62.34
FUEL CAPACITY – GALLONS	6	6	7.1
FUEL CAPACITY – LITERS			27
OIL CAPACITY – QUARTS	4	4	4
WHEELBASE	63.5	63.5	58.4
LENGTH	93.7	93.7	87.8
WEIGHT	798	799	695
OVERALL HEIGHT	61	61	56.3
SEAT HEIGHT	30	30	*32.2
EPA MILEAGE – CITY	32.5	32.5	N/A
EPA MILEAGE - HIGHWAY	45	45	48 @ 75mph 65 @ 55mph

MOTORCYCLE DYNAMICS TESTING

MOTORCYCLE DYNAMICS TEST OBJECTIVE

Determine each motorcycle's high speed handling characteristics and performance in comparison to other motorcycles. The course used contains 9 turns and curves (including a 90 degree left turn, a switch back, a sweeping turn, a high speed turn and a decreasing radius, with different braking requirements) and is .9 miles in length. The course simulates actual conditions encountered in pursuit or emergency driving situations in the field, with the exception of other traffic. The evaluation is a true test of the vehicle manufacturers in offering balanced packages of acceleration capabilities, suspension components, and braking characteristics.

MOTORCYCLE DYNAMICS TEST METHODOLOGY

Each motorcycle is driven using four separate riders for a six lap series. The best 5 out of six laps for each rider will be totaled for a cumulative time. The cumulative time is the score for each driver. The final score of each motorcycle is the combined average from the four rider's cumulative times.



MOTORCYCLE DYNAMICS

VEHICLES	DRIVERS	COMBINED CUMULATIVE
Harley Davidson	GROMAK	06:16.9
FLHTP	JOHNSON	06:16.8
Electra Glide	TRAMMEL	06:28.4
	FLEGEL	06:14.2
Overall Average		06:19.0
Harley Davidson	GROMAK	06:17.3
FLHP	JOHNSON	06:14.4
Road King	TRAMMEL	06:25.1
	FLEGEL	06:12.1
Overall Average		06:17.4
BMW	GROMAK	05:42.0
R1200RTP	JOHNSON	05:48.7
	TRAMMEL	06:03.8
	FLEGEL	05:43.2
Overall Average		05:49.4



MOTORCYCLE ACCELERATION AND TOP SPEED TESTING

ACCELERATION TEST OBJECTIVE

Determine the ability of each test motorcycle to accelerate from a standing start to 60 mph, 80 mph, and 100 mph, and determine the distance to reach 110 mph and 120 mph.

ACCELERATION TEST METHODOLOGY

Using a Microsat GPS speed and distance sensor, each motorcycle is driven through four acceleration sequences, two northbound and two southbound, to allow for wind direction. The four resulting times for each target speed are averaged and the average times used to derive scores on the competitive test for acceleration.

TOP SPEED TEST OBJECTIVE

Determine the actual top speed attainable by each test motorcycle within a distance of 10 miles from a standing start.

TOP SPEED TEST METHODOLOGY

Following the fourth acceleration run, each test motorcycle will continue to accelerate to the top speed attainable within 10 miles from the start of the run. The highest speed attained within the 10-mile distance will be the vehicle's score on the competitive test for top speed.

SUMMARY OF ACCELERATION & TOP SPEED

ACCELERATION*	Harley Davidson FLHP	Harley Davidson FLHTP	BMW
0 – 20 mph (sec.)	1.29	1.38	1.30
0 – 30 mph (sec.)	2.06	2.14	2.00
0 – 40 mph (sec.)	2.83	2.98	2.59
0 – 50 mph (sec.)	4.05	4.18	3.33
0 – 60 mph (sec.)	5.59	5.64	4.10
0 – 70 mph (sec.)	7.22	7.45	5.22
0 – 80 mph (sec.)	9.88	10.04	6.36
0 – 90 mph (sec.)	13.46	14.06	8.03
0 – 100 mph (sec.)	25.44	26.05	10.01
TOP SPEED (mph)	109.1	106.2	130.9
QUARTER MILE			
Time (sec.)	14.42	14.59	12.74
Speed (mph)	92.25	91.16	108.27



BRAKE TESTING

BRAKE TEST OBJECTIVE

Determine the deceleration rate attained by each test motorcycle on twelve 60 – 0 mph impending skid (threshold) stops, with ABS in operation if the motorcycle is so equipped. Each bike will be scored on the average deceleration rate it attains.

BRAKE TEST METHODOLOGY

Each motorcycle makes two decelerations at specific predetermined points on the test road from 90 – 0 mph at 22 ft/s², with the rider using a decelerometer to maintain the deceleration rate. Immediately after these “heat-up” stops are completed, the motorcycle turns around and makes six measured 60 – 0 mph impending skid (threshold) stops with ABS in operation at specific predetermined points. The entire sequence is repeated. The exact initial velocity at the beginning of each of the 60 – 0 mph decelerations, and the exact distance required to make each stop is recorded by means of a non contact microsat GPS in conjunction with electronic speed and distance meters. The data resulting from the twelve total stops is used to calculate the average deceleration rate which is the motorcycle’s score for this test.

DECELERATION RATE FORMULA

$$\text{Deceleration Rate (DR)} = \frac{\text{Initial Velocity}^*(\text{IV}) \text{ squared}}{2 \text{ times Stopping Distance (SD)}} = \frac{(\text{IV})^2}{2 (\text{SD})}$$

EXAMPLE:

$$\begin{aligned} \text{Initial Velocity} &= 89.175 \text{ ft/s (60.8 mph x 1.4667*)} \\ \text{Stopping Distance} &= 171.4 \text{ ft.} \end{aligned}$$

$$\text{DR} = \frac{(\text{IV})^2}{2(\text{SD})} = \frac{(89.175)^2}{2(171.4)} = \frac{7952.24}{342.8} = 23.198 \text{ ft/s}^2$$

Once a motorcycle’s average deceleration rate has been determined, it is possible to calculate the stopping distance from any given speed by utilizing the following formula:

Select a speed; translate that speed into feet per second; square the feet per second figure by multiplying it by itself; divide the resultant figure by 2; divide the remaining figure by the average deceleration rate of the motorcycle in question.

EXAMPLE:

$$60 \text{ mph} = 88.002 \text{ ft/s} \times 88.002 = 7744.352 / 2 = 3872.176 / 23.198 \text{ ft/s}^2 = 166.9 \text{ ft.}$$

BRAKE TESTING

TEST LOCATION: Chrysler Proving Grounds

DATE: September 17, 2007

BEGINNING Time: 3:30 p.m.

TEMPERATURE: 55.1°F

MAKE & MODEL: Harley Davidson Electra Glide FLHTP

BRAKE SYSTEM: Anti-lock

Phase I

BRAKE HEAT-UP: (Two 90 → 0 mph decelerations @ 22 ft.sec.²)

TEST: (Six 60 → mph impending skid (ABS) maximum deceleration rate stops)

	Initial Velocity	Stopping Distance	Deceleration Rate
Stop #1	59.5 mph	178.0 feet	21.40 ft/s ²
Stop #2	59.7 mph	161.5 feet	23.69 ft/s ²
Stop #3	59.4 mph	164.6 feet	23.02 ft/s ²
Stop #4	60.2 mph	175.0 feet	22.28 ft/s ²
Stop #5	60.1 mph	177.2 feet	21.89 ft/s ²
Stop #6	60.0 mph	174.2 feet	22.20 ft/s ²

AVERAGE DECELERATION RATE

22.41 ft/s²

Phase II

BRAKE HEAT-UP: (Two 90 → 0 mph decelerations @ 22 ft.sec.²)

TEST: (Six 60 → mph impending skid (ABS) maximum deceleration rate stops)

	Initial Velocity	Stopping Distance	Deceleration Rate
Stop #1	60.5 mph	176.2 feet	22.31 ft/s ²
Stop #2	59.5 mph	173.5 feet	21.96 ft/s ²
Stop #3	59.2 mph	170.7 feet	22.12 ft/s ²
Stop #4	60.1 mph	176.3 feet	22.04 ft/s ²
Stop #5	60.4 mph	175.6 feet	22.34 ft/s ²
Stop #6	60.3 mph	171.1 feet	22.82 ft/s ²

AVERAGE DECELERATION RATE

22.27 ft/s²

Phase III

	Yes/No
Evidence of severe fading?	<u>No</u>
Vehicle stopped in straight line?	<u>Yes</u>
Vehicle stopped within correct lane?	<u>Yes</u>

OVERALL AVERAGE DECEL. RATE:

22.34 ft/s²

Projected Stopping Distance from 60.0 mph 173.3

BRAKE TESTING

TEST LOCATION: Chrysler Proving Grounds

DATE: September 17, 2007

BEGINNING Time: 3:00 p.m.

TEMPERATURE: 55.9°F

MAKE & MODEL: Harley Davidson Road King FLHP

BRAKE SYSTEM: Anti-lock

Phase I

BRAKE HEAT-UP: (Two 90 → 0 mph decelerations @ 22 ft.sec.²)

TEST: (Six 60 → mph impending skid (ABS) maximum deceleration rate stops)

	Initial Velocity	Stopping Distance	Deceleration Rate
Stop #1	60.2 mph	168.6 feet	23.09 ft/s ²
Stop #2	59.9 mph	161.4 feet	23.92 ft/s ²
Stop #3	59.6 mph	176.6 feet	21.62 ft/s ²
Stop #4	60.2 mph	177.3 feet	21.98 ft/s ²
Stop #5	59.9 mph	174.3 feet	22.11 ft/s ²
Stop #6	59.5 mph	169.2 feet	22.50 ft/s ²

AVERAGE DECELERATION RATE

22.54 ft/s²

Phase II

BRAKE HEAT-UP: (Two 90 → 0 mph decelerations @ 22 ft.sec.²)

TEST: (Six 60 → mph impending skid (ABS) maximum deceleration rate stops)

	Initial Velocity	Stopping Distance	Deceleration Rate
Stop #1	59.9 mph	170.2 feet	22.64 ft/s ²
Stop #2	59.7 mph	177.1 feet	21.65 ft/s ²
Stop #3	59.4 mph	171.2 feet	22.14 ft/s ²
Stop #4	59.5 mph	171.7 feet	22.17 ft/s ²
Stop #5	60.2 mph	160.7 feet	24.26 ft/s ²
Stop #6	59.3 mph	164.0 feet	23.09 ft/s ²

AVERAGE DECELERATION RATE

22.66 ft/s²

Phase III

	Yes/No
Evidence of severe fading?	<u>No</u>
Vehicle stopped in straight line?	<u>Yes</u>
Vehicle stopped within correct lane?	<u>Yes</u>

OVERALL AVERAGE DECEL. RATE:

22.60 ft/s²

Projected Stopping Distance from 60.0 mph 171.4

BRAKE TESTING

TEST LOCATION: Chrysler Proving Grounds

DATE: September 17, 2007

BEGINNING Time: 3:50 p.m.

TEMPERATURE: 56.9°F

MAKE & MODEL: BMW R1200RTP

BRAKE SYSTEM: Anti-lock

Phase I

BRAKE HEAT-UP: (Two 90 → 0 mph decelerations @ 22 ft.sec.²)

TEST: (Six 60 → mph impending skid (ABS) maximum deceleration rate stops)

	Initial Velocity	Stopping Distance	Deceleration Rate
Stop #1	59.0 mph	135.3 feet	27.69 ft/s ²
Stop #2	59.4 mph	133.8 feet	28.37 ft/s ²
Stop #3	60.3 mph	141.6 feet	27.62 ft/s ²
Stop #4	60.2 mph	143.5 feet	27.17 ft/s ²
Stop #5	60.6 mph	144.0 feet	27.42 ft/s ²
Stop #6	59.9 mph	138.0 feet	28.00 ft/s ²

AVERAGE DECELERATION RATE

27.71 ft/s²

Phase II

BRAKE HEAT-UP: (Two 90 → 0 mph decelerations @ 22 ft.sec.²)

TEST: (Six 60 → mph impending skid (ABS) maximum deceleration rate stops)

	Initial Velocity	Stopping Distance	Deceleration Rate
Stop #1	59.9 mph	153.5 feet	25.17 ft/s ²
Stop #2	60.2 mph	146.4 feet	26.59 ft/s ²
Stop #3	60.5 mph	145.2 feet	27.09 ft/s ²
Stop #4	60.6 mph	124.6 feet	31.66 ft/s ²
Stop #5	59.4 mph	130.9 feet	29.02 ft/s ²
Stop #6	60.0 mph	136.1 feet	28.47 ft/s ²

AVERAGE DECELERATION RATE

28.00 ft/s²

Phase III

	Yes/No
Evidence of severe fading?	<u>No</u>
Vehicle stopped in straight line?	<u>Yes</u>
Vehicle stopped within correct lane?	<u>Yes</u>

OVERALL AVERAGE DECEL. RATE:

27.86 ft/s²

Projected Stopping Distance from 60.0 mph 139.0

HIGH TO LOW μ TRANSITION ANTI-LOCK BRAKE SYSTEM TEST

TEST OBJECTIVE

Determine the deceleration rate attained by each test motorcycle during the best five out of six 40-0 mph ABS panic stops on a transitional brake surface.

TEST METHODOLOGY

The motorcycle is accelerated to 40 mph and both brakes (front and rear) applied simultaneously to simulate an ABS panic stop. The initial deceleration begins on a dry asphalt surface (with a relatively high coefficient of friction-high μ) and transitions 30 feet further to a wet seal coated skid pad surface (with a relatively low coefficient of friction-low μ). The exact initial velocity at the beginning of each 40 mph – 0 decelerations and the exact distance required to make each stop is recorded by means of a Microsat GPS non contact sensor measuring speed and distance. The data from the best 5 out of 6 total stops is used to calculate the average deceleration rate which is the vehicle's score for this test.

TEST LOCATION: Precision Driving Unit, Lansing

DATE: September 16, 2007

BEGINNING Time: 2:45 p.m.

TEMPERATURE: 64°F

MAKE & MODEL: Harley Davidson FLHTP-Electra Glide

BRAKE SYSTEM: Anti-lock

Phase I

TEST: Determine the deceleration rate attained by each test motorcycle during the best five out of six 40-0 mph ABS panic stops on a transitional brake surface.

	Initial Velocity	Stopping Distance	Deceleration Rate
Stop #1	37.25 mph	101.05 feet	14.77 ft/s ²
Stop #2	38.56 mph	113.87 feet	14.04 ft/s ²
Stop #3	37.86 mph	113.19 feet	13.62 ft/s ²
Stop #4	39.70 mph	135.61 feet	12.70 ft/s ²
Stop #5	38.48 mph	117.06 feet	13.62 ft/s ²

AVERAGE DECELERATION RATE

13.71 ft/s²

Phase II

Evidence of severe fading?
Vehicle stopped in straight line?

Yes/No
No
Yes

Projected Stopping Distance from 40.0 mph 125.6

HIGH TO LOW U_m TRANSITION ANTI-LOCK BRAKE SYSTEM TEST

TEST LOCATION: Precision Driving Unit, Lansing

DATE: September 16, 2007

BEGINNING TIME: 2:00 p.m.

TEMPERATURE: 64°F

MAKE & MODEL: Harley Davidson FLHP-Road King

BRAKE SYSTEM: Anti-lock

Phase I

TEST: Determine the deceleration rate attained by each test motorcycle during the best five out of six 40-0 mph ABS panic stops on a transitional brake surface.

	Initial Velocity	Stopping Distance	Deceleration Rate
Stop #1	38.20 mph	124.18 feet	12.64 ft/s ²
Stop #2	36.87 mph	121.72 feet	11.99 ft/s ²
Stop #3	38.28 mph	119.65 feet	12.95 ft/s ²
Stop #4	37.69 mph	125.29 feet	12.20 ft/s ²
Stop #5	38.90 mph	122.67 feet	13.27 ft/s ²

AVERAGE DECELERATION RATE

12.66 ft/s²

Phase II

Evidence of severe fading?

Yes/No

No

Vehicle stopped in straight line?

Yes

Projected Stopping Distance from 40.0 mph **136.0**

TEST LOCATION: Precision Driving Unit, Lansing

DATE: September 16, 2007

BEGINNING Time: 3:30 p.m.

TEMPERATURE: 64°F

MAKE & MODEL: BMW R1200RTP

BRAKE SYSTEM: Anti-lock

Phase I

TEST: Determine the deceleration rate attained by each test motorcycle during the best five out of six 40-0 mph ABS panic stops on a transitional brake surface.

	Initial Velocity	Stopping Distance	Deceleration Rate
Stop #1	41.17 mph	109.20 feet	15.15 ft/s ²
Stop #2	39.56 mph	86.95 feet	19.35 ft/s ²
Stop #3	38.20 mph	97.64 feet	16.07 ft/s ²
Stop #4	40.08 mph	102.00 feet	15.55 ft/s ²
Stop #5	40.92 mph	100.05 feet	16.66 ft/s ²

AVERAGE DECELERATION RATE

17.41 ft/s²

Phase II

Evidence of severe fading?

Yes/No

No

Vehicle stopped in straight line?

Yes

Projected Stopping Distance from 40.0 mph **98.8**

COMMUNICATIONS

TEST OBJECTIVE

Rate each test motorcycle's ability to:

Accommodate the required communications and emergency warning equipment and assess the relative difficulty of such installations.

TEST METHODOLOGY

The installation and communications portion of the evaluation will be conducted by Canfield Equipment Service, Inc. based upon the relative difficulty of the necessary installations. Each factor will be graded on a 1 to 10 scale, with 1 representing "totally unacceptable," 5 representing "average," and 10 representing "superior." The scores will be averaged to minimize personal prejudice for or against any given motorcycle.

	BMW R1200RTP	FLHP ROAD KING	FLHTP ELECTRA GLIDE
Dash Access			
Ignition Fuse terminal block	7.50	7.50	7.50
Radio-Siren Mounting location	9.00	9.00	9.00
Radio-Installation	7.00	7.00	8.00
Radio Box Position	8.00	8.50	8.50
Emergency Lights	8.00	8.00	8.00
Radio Interference	8.00	8.00	8.00
Radio Box			
Radio Installation	9.00	7.50	7.50
Antenna Installation	8.50	8.50	8.50
Emergency Lights Installation	8.00	7.50	7.50
Engine Access			
Radio Power Conn.	8.00	7.00	7.00
Power/Cont.Cable	6.50	7.00	7.00
TOTAL	87.50	85.50	86.50

About the Law Enforcement and Corrections Standards and Testing Program

The Law Enforcement and Corrections Standards and Testing Program is sponsored by the Office of Science and Technology of the National Institute of Justice (NIJ), U.S. Department of Justice. The program responds to the mandate of the Justice System Improvement Act of 1979, which directed NIJ to encourage research and development to improve the criminal justice system and to disseminate the results to Federal, State, and local agencies.

The Law Enforcement and Corrections Standards and Testing Program is an applied research effort that determines the technological needs of justice system agencies, sets minimum performance standards for specific devices, tests commercially available equipment against those standards, and disseminates the standards and the test results to criminal justice agencies nationwide and internationally.

The program operates through the following:

- The **Law Enforcement and Corrections Technology Advisory Council (LECTAC)**, consisting of nationally recognized criminal justice practitioners from Federal, State, and local agencies, assesses technological needs and sets priorities for research programs and items to be evaluated and tested.
- The **Office of Law Enforcement Standards (OLES)** at the National Institute of Standards and Technology develops voluntary national performance standards for compliance testing to ensure that individual items of equipment are suitable for use by criminal justice agencies. The equipment standards developed by OLES are based on laboratory evaluation of commercially available products in order to devise precise test methods that can be universally applied by any qualified testing laboratory and to establish minimum performance requirements for each attribute of a piece of equipment that is essential to how it functions. OLES-developed standards can serve as design criteria for manufacturers or as the basis for equipment evaluation. The application of the standards, which are highly technical in nature, is augmented through the publication of equipment performance reports and user guides. Individual jurisdictions may use the standards in their own laboratories to test equipment, have equipment tested on their behalf using the standards, or cite the standards in procurement specifications.
- The **National Law Enforcement and Corrections Technology Center (NLECTC)**, operated by a grantee, supervises a national compliance testing program conducted by independent laboratories. The standards developed by OLES serve as performance benchmarks against which commercial equipment is measured. The facilities, personnel, and testing capabilities of the independent laboratories are evaluated by OLES prior to testing each item of equipment. In addition, OLES helps NLECTC staff review and analyze data. Test results are published in consumer product reports designed to help justice system procurement officials make informed purchasing decisions.

Publications are available at no charge through NLECTC. Some documents are also available online through the Justice Technology Information Network (JUSTNET), the center's Internet/World Wide Web site. To request a document or additional information, call 800-248-2742 or 301-519-5060, or write:

National Law Enforcement and Corrections Technology Center

2277 Research Boulevard

Mail Stop 8J

Rockville, MD 20850

E-mail: asknlectc@nlectc.org

World Wide Web address: <http://www.justnet.org>

About the National Law Enforcement and Corrections Technology Center System

The National Law Enforcement and Corrections Technology Center (NLECTC) system exists to support the Nation's structure of State and local law enforcement and corrections. The United States has more than 18,000 law enforcement agencies, 50 State correctional systems, and thousands of prisons and jails. The fragmented nature of law enforcement and corrections impedes the dissemination of valuable new information, fosters a patchwork marketplace that discourages the commercialization of new technologies, and underscores the need for uniform performance standards for equipment and technologies.

The National Institute of Justice's (NIJ's) Office of Science and Technology (OS&T) created NLECTC in 1994 as a national system of technology centers that are clearinghouses of information and sources of technology assistance and that also attend to special needs, including technology commercialization and standards development.

The NLECTC system's purpose is to determine the needs of the law enforcement and corrections communities and assist them in understanding, using, and benefitting from new and existing technologies that, increasingly, are vital levers of progress in criminal justice. NIJ/OS&T and the NLECTC system are the only current programs developed by the Federal Government that focus solely on the development and transfer of technologies to State and local law enforcement and corrections.

NLECTC is a program of NIJ, the research and development arm of the U.S. Department of Justice. The system currently consists of a national center, five regional centers, and several speciality offices. Also contributing to the initiatives of the center system is the Office of Law Enforcement Standards. The centers are co-located with a host organization or agency that specializes in one or more areas of technology research and development.

The National Center, located in Rockville, Maryland, is the system's information hub. Regional centers are currently located in Alaska, California, Colorado, New York, and South Carolina. Speciality centers located around the country deal with border matters (California), commercialization of law enforcement and corrections technologies (West Virginia), rural law enforcement issues (Kentucky), and standards and testing (Maryland).

Each center shares roles with the other centers and has distinctive characteristics. All are focused on helping law enforcement and corrections take full advantage of technology's rapidly growing capacity to serve the purposes of crime control and the criminal justice system.

A national body of criminal justice professionals, the Law Enforcement and Corrections Technology Advisory Council (LECTAC), helps identify research and development priorities, thereby influencing the work of the NLECTC system. In addition, each NLECTC center has a regional advisory council of law enforcement and corrections officials. Together, LECTAC and the advisory councils help to keep the NLECTC system attentive to technological priorities and the needs of law enforcement and corrections. They help to link the end user with the developer to create technologies that adequately meet operational requirements and establish which potential technologies should be pursued for development.

All of the current regional centers have distinctive roles or focus areas, that, in many cases, are aligned with the expertise of host organizations and agencies. The centers are currently operated under cooperative agreements or interagency agreements with host organizations and agencies whose employees staff the centers.

To receive more information or to add your name to the NLECTC mailing list, call 800–248–2742 or 301–519–5060, or write:

National Law Enforcement and Corrections Technology Center

2277 Research Boulevard

Mail Stop 8J

Rockville, MD 20850

E-mail: asknlectc@nlectc.org

World Wide Web address: <http://www.justnet.org>

The following is a list of NLECTC regional and affiliated facilities that assist NIJ in fulfilling its mission.

NLECTC–Northeast

26 Electronic Parkway

Rome, NY 13441–4514

(p) 888–338–0584

(f) 315–330–4315

E-mail: nlectc_ne@rl.af.mil

NLECTC–Southeast

5300 International Boulevard

North Charleston, SC 29418

(p) 800–292–4385

(f) 843–760–4611

E-mail: nlectc-se@nlectc-se.org

NLECTC–Rocky Mountain

2050 East Iliff Avenue

Denver, CO 80208

(p) 800–416–8086

(f) 303–871–2500

E-mail: nlectc@du.edu

NLECTC–West

c/o The Aerospace Corporation

2350 East El Segundo Boulevard

El Segundo, CA 90245–4691

(p) 888–548–1618

(f) 310–336–2227

E-mail: nlectc@law-west.org

NLECTC–Northwest

3000 C Street

Suite 304

Anchorage, AK 99503–3975

(p) 866–569–2969

(f) 907–569–6939

E-mail: nlectc_nw@ctsc.net

Border Research and Technology Center

1010 Second Avenue

Suite 1920

San Diego, CA 92101–4912

(p) 888–656–2782

(f) 888–660–2782

E-mail: info@brtc.nlectc.org

Rural Law Enforcement Technology Center

101 Bulldog Lane
Hazard, KY 41701
(p) 866-787-2553
(f) 606-436-6758
E-mail: ruletc@aol.com

Office of Law Enforcement Technology Commercialization

2001 Main Street
Suite 500
Wheeling, WV 26003
(p) 888-306-5382
(f) 304-230-2310
E-mail: oletc@oletc.org

Office of Law Enforcement Standards

100 Bureau Drive
Stop 8102
Gaithersburg, MD 20899-8102
(p) 301-975-2757
(f) 301-948-0978
E-mail: oles@nist.gov

About the Office of Law Enforcement Standards

The Office of Law Enforcement Standards (OLES) was established as a matrix management organization in 1971 through a Memorandum of Understanding between the U.S. Departments of Justice and Commerce based on the recommendations of the President's Commission on Crime. OLES's mission is to apply science and technology to the needs of the criminal justice community, including law enforcement, corrections, forensic science, and the fire service. While its major objective is to develop minimum performance standards, which are promulgated as voluntary national standards, OLES also undertakes studies leading to the publication of technical reports and user guides.

The areas of research investigated by OLES include clothing, communication systems, emergency equipment, investigative aids, protective equipment, security systems, vehicles, weapons, and analytical techniques and standard reference materials used by the forensic science community. The composition of OLES's projects varies depending on priorities of the criminal justice community at any given time and, as necessary, draws on the resources of the National Institute of Standards and Technology.

OLES assists law enforcement and criminal justice agencies in acquiring, on a cost-effective basis, the high-quality resources they need to do their jobs. To accomplish this, OLES:

- Develops methods for testing equipment performance and examining evidentiary materials.
- Develops standards for equipment and operating procedures.
- Develops standard reference materials.
- Performs other scientific and engineering research as required.

Since the program began in 1971, OLES has coordinated the development of nearly 200 standards, user guides, and advisory reports. Topics range from performance parameters of police patrol vehicles, to performance reports on various speed-measuring devices, to soft body armor testing, to analytical procedures for developing DNA profiles.

The application of technology to enhance the efficiency and effectiveness of the criminal justice community continues to increase. The proper adoption of the products resulting from emerging technologies and the assessment of equipment performance, systems, methodologies, etc., used by criminal justice practitioners constitute critical issues having safety and legal ramifications. The consequences of inadequate equipment performance or inadequate test methods can range from inconvenient to catastrophic. In addition, these deficiencies can adversely affect the general population when they increase public safety costs, preclude arrest, or result in evidence found to be inadmissible in court.